

=> FILE REG  
FILE 'REGISTRY' ENTERED ON 27 APR 2007  
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=> D HIS

FILE 'LREGISTRY'  
L1 STR  
  
FILE 'REGISTRY'  
L2 0 S L1  
L3 SCR 1404 AND 1707  
L4 0 S L1 AND L3  
  
FILE 'LREGISTRY'  
L5 STR L1  
  
FILE 'REGISTRY'  
L6 50 S L5 AND L3  
L7 SCR 1838  
L8 50 S L5 AND L3 NOT L7  
L9 2445 S L5 AND L3 NOT L7 FUL  
SAV L9 WEI268/A  
L10 2 S L1 SSS SAM SUB=L9  
L11 45 S L1 SSS FUL SUB=L9  
SAV L11 WEI268A/A  
  
FILE 'HCA'  
L13 588 S L11  
  
FILE 'REGISTRY'  
L14 1 S 110-67-8  
L15 44 S L11 NOT L14  
  
FILE 'HCA'  
L16 237 S L15  
L17 480980 S ELECTROLY?  
L18 235743 S (BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR  
L19 QUE ?CARBONAT?  
E ETHERS/CV  
L20 40651 S E3  
E ESTERS/CV  
L21 52872 S E3

L22 12 S L16 AND (L17 OR L18)  
L23 101 S L13 AND (L17 OR L18)  
L24 32 S L23 AND (L19 OR L20 OR L21)

FILE 'HCAPLUS'  
L25 6771 S SUN L?/AU  
L26 48593 S BATTERY/TI  
L27 8 S L25 AND L26  
SEL L27 2 RN

FILE 'REGISTRY'  
L28 27 S E1-E27  
L29 10 S L28 AND LI/ELS  
L30 6 S L29 NOT TIS/CI

FILE 'HCA'  
L31 18933 S L30  
L32 2 S L11 AND L28

FILE 'HCA'  
L33 530 S L32

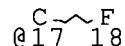
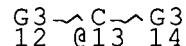
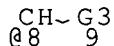
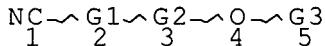
FILE 'REGISTRY'  
L34 6 S L28 AND ?CARBONAT?/CNS  
L35 2 S L34 AND RSD/FA

FILE 'HCA'  
L36 16658 S L35  
L37 42 S L36 AND L33  
L38 29 S L37 AND (L17 OR L18)  
L39 19 S 1840-2003/PRY,PY AND L38  
L40 101 S L13 AND (L17 OR L18)  
L41 32 S L40 AND (L19 OR L20 OR L21)  
L42 19 S L40 AND L31  
L43 12 S L41 AND L42  
L44 5 S L22 AND L43  
L45 12 S L22 OR L44  
L46 14 S (L42 OR L43) NOT L45  
L47 19 S L41 NOT (L45 OR L46)  
L48 10 S 1840-2003/PRY,PY AND L45  
L49 7 S 1840-2003/PRY,PY AND L46  
L50 11 S 1840-2003/PRY,PY AND L47

FILE 'REGISTRY'

=> D L11 QUE STAT

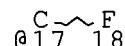
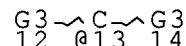
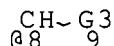
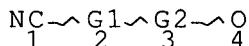
L1 STR



VAR G1=CH2/8/13  
REP G2=(1-2) CH2  
VAR G3=ME/ET/N-PR/I-PR/17  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE  
L3 SCR 1404 AND 1707  
L5 STR



VAR G1=CH2/8/13  
REP G2=(0-2) CH2  
VAR G3=ME/ET/N-PR/I-PR/17  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE  
L7 SCR 1838  
L9 2445 SEA FILE=REGISTRY SSS FUL L5 AND L3 NOT L7  
L11 45 SEA FILE=REGISTRY SUB=L9 SSS FUL L1

100.0% PROCESSED 2445 ITERATIONS  
SEARCH TIME: 00.00.01

45 ANSWERS

=> FILE HCA  
FILE 'HCA' ENTERED ON 27 APR 2007  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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=> D L39 1-19 CBIB ABS HITSTR HITIND

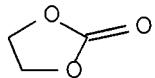
L39 ANSWER 1 OF 19 HCA COPYRIGHT 2007 ACS on STN  
143:29529 Nonaqueous **electrolytes** having an extended  
temperature range for **battery** applications. Sun, Luying  
(USA). U.S. Pat. Appl. Publ. US 2005123835 A1 20050609, 17 pp.  
(English). CODEN: USXXCO. APPLICATION: US 2003-731268 20031209.

AB The present invention discloses non-aq. **electrolytes** having an  
extended temp. range for **battery** applications. The **electrolyte**  
comprises an **electrolyte** salt, e.g., LiPF<sub>6</sub>, a first non-aq. solvent,  
and a second non-aq. solvent. The **electrolyte** of the present  
invention has higher ionic cond., lower f.p., and lower vapor  
pressure at high temp. than com. **electrolytes**. These non-aq.  
**electrolytes** can be used, for example, in lithium-ion **batteries**.  
Methods of making lithium-ion **batteries** are also described.

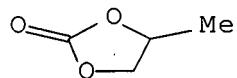
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene  
carbonate 110-67-8, 3-Methoxypropionitrile  
2141-62-0, 3-Ethoxypropionitrile  
(nonaq. **electrolytes** having extended temp. range for  
**battery** applications)

RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

EtO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M010-40  
      ICS H01M004-52; H01M004-50; H01M004-58  
INCL 429326000; 429330000; 429339000; 429231300; 429231100; 429223000;  
      429221000; 429224000; 429231800  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 76  
ST **battery** nonaq **electrolyte** extended temp range  
IT Electrochromic devices  
Sensors  
      (**electrolyte**; nonaq. **electrolytes** having  
      extended temp. range for **battery** applications)  
IT Secondary **batteries**  
      (lithium; nonaq. **electrolytes** having extended temp.  
      range for **battery** applications)  
IT **Battery electrolytes**  
      **Electrolytic** capacitors  
Fuel **cell electrolytes**  
Ionic conductivity  
      (nonaq. **electrolytes** having extended temp. range for  
      **battery** applications)  
IT Carbonaceous materials (technological products)  
Coke  
Esters, uses  
Ethers, uses  
      (nonaq. **electrolytes** having extended temp. range for  
      **battery** applications)  
IT Sulfonic acids, uses  
      (perfluoro, lithium salt; nonaq. **electrolytes** having

extended temp. range for **battery** applications)

IT Perfluoro compounds

(sulfonic acids, lithium salt; nonaq. **electrolytes**

having extended temp. range for **battery** applications)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 110-67-8,

3-Methoxypropionitrile 463-79-6D, Carbonic acid, ester, cyclic

463-79-6D, Carbonic acid, ester, linear 616-38-6, Dimethyl

carbonate 623-53-0, Ethyl methyl carbonate 1001-55-4,

2-Acetoxyacetonitrile 1656-48-0 1738-36-9, Methoxyacetonitrile

2141-62-0, 3-Ethoxypropionitrile 7782-42-5, Graphite, uses

7791-03-9, Lithium perchlorate 12031-65-1, Lithium nickel oxide

(LiNiO<sub>2</sub>) 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>)

12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 14283-07-9, Lithium

tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo<sub>4</sub>

18804-04-1, uses 21324-40-3, Lithium hexafluorophosphate

29935-35-1, Lithium hexafluoroarsenate 56756-91-3 62957-60-2,

Ethoxyacetonitrile 90076-65-6 260362-83-2 311346-25-5, Cobalt

lithium nickel oxide (Co<sub>0.1-0.9</sub>LiNi<sub>0.1-0.9</sub>O<sub>2</sub>) 852995-04-1

(nonaq. **electrolytes** having extended temp. range for  
**battery** applications)

L39 ANSWER 2 OF 19 HCA COPYRIGHT 2007 ACS on STN

140:294908 An improved electrochromic or electrodeposition display and novel process for their manufacture. Liang, Rong-chang; Hou, Jack; Ananthavel, Sundaravel P. (Sipix Imaging, Inc., USA). PCT Int.

Appl. WO 2004025356 A2 20040325, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US28540 20030910. PRIORITY: US 2002-409833P 20020910.

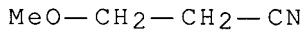
AB An electrochromic or electrodeposition display is described comprising a plurality of cells enclosed between the two electrodes, each of the cells comprising (i) surrounding partition walls (microcup), (ii) an electrochromic fluid or **electrolytic** fluid (e.g., silver nitrate in a polymer matrix) filled therein, and (iii) a polymeric sealing layer which encloses the electrochromic fluid or **electrolytic** fluid within each cell and sealingly adheres to the surface of the partition walls. The display device may also have a top electrode plate and a bottom electrode plate, at least one of which is transparent. A method of prep. an electrochromic or electrodeposition display is also described entailing (a) embossing a

thermoplastic or thermoset precursor layer with a pre-patterned male mold; (b) hardening the thermoplastics or thermoset precursor layer; (c) releasing the mold from the thermoplastic or thermoset precursor layer; (d) filling the thus-formed array of microcups with an electrochromic or electrodeposition fluid; and (e) sealing the filled microcups.

IT **110-67-8**, 3-Methoxypropionitrile.  
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)

RN 110-67-8 HCA

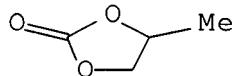
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IT **108-32-7**, Propylene carbonate  
(non-aq. solvent; electrochromic or electrodeposition display and fabrication method)

RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



IC ICM G02F001-00

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 72, 76

IT Gelatins, uses  
Polyoxyalkylenes, uses  
(**electrolytic** fluid; electrochromic or electrodeposition display and fabrication method)

IT **110-67-8**, 3-Methoxypropionitrile.  
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium triflate  
35895-70-6, Tetrabutylammonium triflate  
(**electrolyte**; electrochromic or electrodeposition display and fabrication method)

IT 7761-88-8, Silver nitrate, uses 9000-01-5, Gum Arabic 9003-39-8,  
Polyvinylpyrrolidone 9004-62-0, Hydroxyethyl cellulose

9004-64-2, Hydroxypropyl cellulose 9004-67-5, Methyl cellulose  
25322-68-3, Poly(ethylene oxide)

(**electrolytic** fluid; electrochromic or  
electrodeposition display and fabrication method)  
IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethyl formamide, uses  
75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
**108-32-7**, Propylene carbonate 109-86-4, 2-Methoxyethanol  
109-87-5, Dimethoxymethane 110-80-5, 2-Ethoxyethanol 127-19-5,  
N, N-Dimethylacetamide 617-84-5, Diethyl formamide 872-50-4,  
N-Methylpyrrolidone, uses 1187-58-2, N-Methylpropionic acid amide  
4553-62-2, 2-Methylglutaronitrile  
(non-aq. solvent; electrochromic or electrodeposition display and  
fabrication method)

L39 ANSWER 3 OF 19 HCA COPYRIGHT 2007 ACS on STN

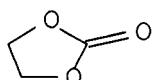
139:373188 **Electrolytic** solutions with high specific  
electroconductivity for double-layer electric capacitors.  
Kobayashi, Yukiya; Seike, Hideo; Takamuku, Yoshinori (Sanyo Chemical  
Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.).  
Jpn. Kokai Tokkyo Koho JP 2003324039 A **20031114**, 8 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-48795 20030226.  
PRIORITY: JP 2002-50174 20020226.

AB The **electrolytic** solns. comprise (A) **electrolytes** contg. amidinium  
cations R23N+C(R1):NR2 or [(R42N)2CR3]+ [R1, R3 = (substituted) C1-20  
hydrocarbyl, H; R2, R4 = (substituted) C1-10 hydrocarbyl; R1 and R2  
or R3 and R4 may link together to form a heterocyclic ring with N]  
and anions and (B) nonaq. solvents with viscosity at 25° 0.1-1.3 mPa-  
s. The double-layer elec. capacitors have polarizable electrodes  
impregnated with the **electrolytic** solns., wherein cathodes or anodes  
contain carbonaceous materials as main components. The double-layer  
elec. capacitors show low equiv. series resistance.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene  
carbonate **110-67-8**, 3-Methoxypropionitrile  
(**electrolyte** solvent; **electrolytic** solns.  
contg. amidinium cations with high specific electrocond. for  
double-layer elec. capacitors)

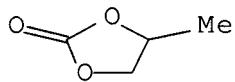
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038

ICS H01G009-035; H01G009-058; H01G009-14

CC 76-10 (Electric Phenomena)

ST **electrolyte** double layer elec capacitor amidinium cation

IT Capacitors

(double layer; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT Carbonaceous materials (technological products)

(electrodes; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT **Electrolytes**

**Electrolytic** capacitors

(**electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 7440-44-0, Activated carbon, uses

(activated, electrode; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-52-5, Nitromethane, uses 79-24-3, Nitroethane **96-49-1**

, Ethylene carbonate 107-12-0, Propionitrile **108-32-7**,

Propylene carbonate 109-74-0, Butyronitrile **110-67-8**,

3-Methoxypropionitrile 126-33-0, Sulfolan 127-19-5,

N,N-Dimethylacetamide 1738-36-9, Methoxyacetonitrile

(**electrolyte** solvent; **electrolytic** solns.

contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 137581-28-3, 1,2,3-Trimethyl-1,4,5,6-tetrahydropyrimidinium

hexafluorophosphate 143314-16-3, 1-Ethyl-3-methylimidazolium  
tetrafluoroborate 620944-22-1, 1,2,3-Trimethylimidazolium  
hexafluorophosphate

(**electrolyte; electrolytic** solns. contg.

amidinium cations with high specific electrocond. for  
double-layer elec. capacitors)

L39 ANSWER 4 OF 19 HCA COPYRIGHT 2007 ACS on STN

139:269341 **Electrolyte** solution for use in capacitors,  
**electrochemical cells**, and lithium ion

**batteries**. Schwake, Andree (Epcos AG, Germany). PCT Int.

Appl. WO 2003081620 A1 **20031002**, 19 pp. DESIGNATED

STATES: W: CN, JP, RU, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2.

APPLICATION: WO 2003-DE815 20030313. PRIORITY: DE 2002-10212609  
20020321.

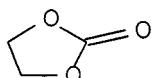
AB The invention relates to an **electrolyte** soln. for **electrochem. cells**  
with a high b.p.  $> 86^\circ$  at 1 bar and a high degree of cond.  $> 40$  mS/cm  
at  $25^\circ$ . The soln. contains MeCN as the 1st solvent, (component A),  
in a proportion of 40-90% of the av. wt. of the solvent, in addn. to  
 $\geq 1$  addnl. electrochem. stable solvent with a b.p.  $> 120^\circ$  at 1 bar, a  
dielec. const.  $> 10$  at  $25^\circ$  and a viscosity  $< 6$  mPa at  $25^\circ$  and addnl.  
 $\geq 1$  support **electrolyte** as component C. Inventive **electrolyte** solns.  
of this type have a high degree of cond., which is comparable to  
**electrolyte** solns. that use MeCN as the sole solvent, while at the  
same time exhibiting an increased b.p. as a result of component B.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene  
carbonate **110-67-8**

(**electrolytic** soln. contg.; **electrolyte** soln.  
for use in capacitors, **electrochem. cells**,  
and lithium ion **batteries**)

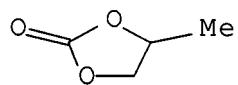
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038  
 ICS H01M010-40  
 CC 76-10 (Electric Phenomena)  
 Section cross-reference(s): 52, 72  
 ST **electrolytic** soln capacitor **electrochem**  
**cell** lithium ion **battery**  
 IT Capacitors  
 (double layer; **electrolyte** soln. for use in capacitors,  
**electrochem. cells**, and lithium ion  
**batteries**)  
 IT **Electrochemical cells**  
**Electrolytic** capacitors  
**Electrolytic** solutions  
 (**electrolyte** soln. for use in capacitors,  
**electrochem. cells**, and lithium ion  
**batteries**)  
 IT Primary **batteries**  
 Secondary **batteries**  
 (lithium; **electrolyte** soln. for use in capacitors,  
**electrochem. cells**, and lithium ion  
**batteries**)  
 IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylformamide, uses  
 80-73-9, N,N-Dimethylimidazolidinone 96-48-0,  $\gamma$ -  
 Butyrolactone **96-49-1**, Ethylene carbonate 105-58-8,  
 Diethyl carbonate 108-29-2,  $\gamma$ -Valerolactone **108-32-7**  
 , Propylene carbonate 110-61-2, Succinonitrile **110-67-8**  
 126-33-0, Sulfolane 127-19-5, Dimethylacetamide 512-56-1,  
 Trimethyl phosphate 544-13-8, Glutaronitrile 623-53-0,  
 Ethylmethyl carbonate 661-36-9, Tetramethylammonium  
 tetrafluoroborate 872-50-4, uses 872-93-5, 3-Methylsulfolane  
 4437-85-8, Butylene carbonate 19836-78-3, 3-Methyl-2-oxazolidinone  
 (**electrolytic** soln. contg.; **electrolyte** soln.)

for use in capacitors, **electrochem. cells**,  
and lithium ion **batteries**)

L39 ANSWER 5 OF 19 HCA COPYRIGHT 2007 ACS on STN

138:139978 Effect of the cell structure elements on performance of dye-sensitized solar cell. Han, Liyuan; Yamanaka, Ryohsuke; Obata, Takatsugu (Technical Main Dept., Sharp Co., Ltd., Japan). Shapu Giho, 83, 49-53 (Japanese) **2002**. CODEN: STEJD9. ISSN: 0285-0362. Publisher: Shapu K.K. Gijutsu Honbu.

AB A TiO<sub>2</sub> porous light electrode, absorption of a dye and compn. of **electrolyte** were investigated for the improvement in energy conversion efficiency of the dye-sensitized solar cell. It is found that increase in the porosity of TiO<sub>2</sub> porous light electrode causes increase in the efficiency because more dye is absorbed on the electrode. Dye uptake increases with absorption temp., when the temp. is over 90°, however, short circuit current (J<sub>sc</sub>) decreases because of dye aggregation. It is also found that high J<sub>sc</sub> can be obtained by increasing the ionic cond. of **electrolyte**. Finally, the efficiency of 8% was obtained. It is necessary to develop a new dye with broad absorbance in order to obtain the efficiency as high as silicon solar cell.

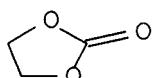
IT **96-49-1**, Ethylene carbonate **110-67-8**,

3-Methoxypropionitrile

(effect of cell structure elements on performance of dye-sensitized solar cell)

RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76

IT 75-05-8, Acetonitrile, uses **96-49-1**, Ethylene carbonate  
**110-67-8**, 3-Methoxypropionitrile 631-40-3,

Tetrapropylammonium iodide 3978-81-2, 4-tert-Butylpyridine  
7553-56-2, Iodine, uses 10377-51-2, Lithium iodide (LiI)  
13463-67-7, Titania, uses 19836-78-3, 3-Methyl-2-oxazolidinone  
218151-78-1, 1,2-Dimethyl-3-propylimidazolium iodide  
(effect of cell structure elements on performance of  
dye-sensitized solar cell)

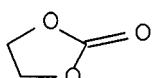
L39 ANSWER 6 OF 19 HCA COPYRIGHT 2007 ACS on STN  
138:82077 Flame-retardant **electrolyte** solution for  
electrochemical double-layer capacitors. Schwake, Andree (Epcos AG,  
Germany). PCT Int. Appl. WO 2003003393 A1 **20030109**, 29  
pp. DESIGNATED STATES: W: AU, BR, CA, CN, CZ, HU, IN, JP, KR, MX,  
RU, UA, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT,  
LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO  
2002-DE1844 20020522. PRIORITY: DE 2001-10128581 20010613.

AB The invention relates to flame-retardant **electrolyte** solns. with  
flash points >76°. The solns. contain ≥1 support **electrolyte** which  
is dissolved in a solvent mixt. consisting of ≥1 highly polar  
component and ≥1 flame-retardant, low-viscosity carbamate component.  
The flame-retardant **electrolyte** solns. are indicated for use in  
electrochem. capacitors with conductivities of > 20 mS/cm at 25°.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene  
carbonate **110-67-8**, 3-Methoxypropionitrile  
(capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
capacitors)

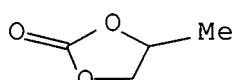
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-00  
ICS H01G009-02; H01M010-40  
CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 72  
ST electrochem double layer capacitor flame retardant  
**electrolyte**  
IT Lactones  
Nitriles, uses  
Phosphonium compounds  
Pyrnidinium compounds  
Quaternary ammonium compounds, uses  
(capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
capacitors)  
IT Felts  
Paper  
Textiles  
(capacitor separator; flame-retardant **electrolyte** soln.  
for electrochem. double-layer capacitors)  
IT Glass fibers, uses  
Polymers, uses  
(capacitor separator; flame-retardant **electrolyte** soln.  
for electrochem. double-layer capacitors)  
IT Capacitors  
(double layer; flame-retardant **electrolyte** soln. for  
electrochem. double-layer capacitors)  
IT Capacitor electrodes  
**Electrolytic** capacitors  
**Electrolytic** solutions  
Fire-resistant materials  
(flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)  
IT Onium compounds  
(imidazolium compds., capacitor **electrolyte** contg.;  
flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)  
IT Onium compounds  
(morpholinium compds., capacitor **electrolyte** contg.;  
flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)

IT Onium compounds  
 (pyrrolidinium compds., capacitor **electrolyte** contg.;  
 flame-retardant **electrolyte** soln. for electrochem.  
 double-layer capacitors)

IT 75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
**96-49-1**, Ethylene carbonate 108-29-2,  $\gamma$ -  
 Valerolactone **108-32-7**, Propylene carbonate 110-61-2,  
 Succinonitrile **110-67-8**, 3-Methoxypropionitrile  
 407-43-2, Carbamic acid, dimethyl-, 2,2,2-trifluoroethyl ester  
 429-06-1, Tetraethylammonium tetrafluoroborate 544-13-8,  
 Glutaronitrile 687-48-9, Ethyl-N,N-dimethylcarbamate 7541-16-4,  
 Methyl-N,N-dimethylcarbamate 69444-47-9, Methyltriethylammonium  
 tetrafluoroborate  
 (capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
 capacitors)

IT 7429-90-5, Aluminum, uses  
 (capacitor separator; flame-retardant **electrolyte** soln.  
 for electrochem. double-layer capacitors)

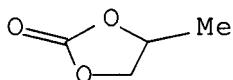
L39 ANSWER 7 OF 19 HCA COPYRIGHT 2007 ACS on STN  
 138:46203 Rest potential of activated carbon electrode in various  
 organic **electrolytes**. Takeda, Masayuki (Sci. Tech. Res.  
 Cent., Mitsubishi Chem. Corp., Japan). Denkai Chikudenki Hyoron,  
 53(1), 135-137 (Japanese) **2002**. CODEN: DCHYAK. ISSN:  
 0286-5629. Publisher: Denkai Chikudenki Kenkyukai.

AB The rest potential of the activated C electrode, which were measured  
 in 14 kinds of org. solvents, such as carbonate, nitriles, lactones,  
 DMF, DMSO, etc., ranged from -0.29 V to -0.16 V vs. EFc/Fc, that  
 could not be correlate with the structure of solvent mol. The  
 relation between the rest potential and the donor no. or the acceptor  
 nos. of these solvents are discussed.

IT **108-32-7**, Propylene carbonate **110-67-8**,  
 3-Methoxypropionitrile  
 (rest potential of activated carbon electrode in)

RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

CC 72-2 (Electrochemistry)  
ST rest potential carbon electrode org **electrolyte**; solvent  
effect rest potential carbon electrode  
IT Electron acceptors  
Electron donors  
(aprotic solvents; rest potential of activated carbon electrode  
in various org. **electrolytes**)  
IT Electrodes  
(rest potential of activated carbon electrode in various org.  
**electrolytes**)  
IT Electric potential  
(rest; of activated carbon electrode in various org.  
**electrolytes**)  
IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, DMF, uses 75-05-8,  
Acetonitrile, uses 80-73-9, N,N-Dimethylimidazolidinone 96-48-0,  
 $\gamma$ -Butyrolactone 108-29-2,  $\gamma$ -Valerolactone  
**108-32-7**, Propylene carbonate **110-67-8**,  
3-Methoxypropionitrile 126-33-0, Sulfolane 127-19-5,  
N,N-Dimethylacetamide 512-56-1, Trimethyl phosphate 872-50-4,  
uses 1738-36-9, Methoxyacetonitrile 59581-66-7  
(rest potential of activated carbon electrode in)  
IT 7440-44-0, Carbon, uses  
(rest potential of activated carbon electrode in various org.  
**electrolytes**)

L39 ANSWER 8 OF 19 HCA COPYRIGHT 2007 ACS on STN  
136:378574 Method of manufacturing a electric double layer  
supercapacitor with electrode of carbon particle layer. Maletin,  
Yurii A.; Strizhakova, Natalie G.; Izotov, Vladimiz Y.; Mironova,  
Antonia A.; Kozachkov, Sergey G.; Danilin, Valery A.; Podmogilny,  
Sergey N.; Arulepp, Mati; Aleksandrovna, Kukusjkina Julia;  
Efimovitj, Kravtjik Aleksandr; Vasilevitj, Sokolov Vasilij; Perkson,  
Anti; Leis, Jaan; Zheng, Jie; Konstantinovich, Gordeev Sergey;  
Kolotilova, Julia Y.; Cederstroem, Jan; Wallace, Clarence L.  
(Ultratec Ltd., UK). PCT Int. Appl. WO 2002039468 A2  
**20020516**, 48 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT,  
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,  
DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,

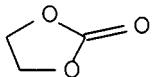
MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP12837 20011106. PRIORITY: US 2000-247593P 20001109; RU 2001-117550 20010615.

AB The present invention relates to an elec. double layer capacitor including  $\geq 1$  pair of polarizable electrodes connected to current collectors, a separator made of ion-permeable but electron-insulating material interposed between the electrodes in each pair of electrodes, and a liq. **electrolyte**. According to the invention the electrodes include a layer of C particles having a narrow distribution of nanopores therein, the pore sizes of the nanopores being adapted to fit the ion sizes of the **electrolyte**.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8, 3-Methoxypropionitrile  
(aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

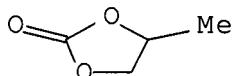
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



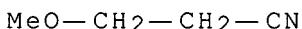
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-00

CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 35

IT Binders  
Capacitor electrodes  
**Electrolytes**  
Filaments  
Halogenation  
Thermal decomposition  
(elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses 78-93-3, Methyl ethyl ketone, uses 96-48-0,  $\gamma$ -Butyrolactone  
**96-49-1**, Ethylene carbonate 100-47-0, Benzonitrile, uses 107-12-0, Propionitrile 108-29-2,  $\gamma$ -Valerolactone  
**108-32-7**, Propylene carbonate 109-74-0, Butyronitrile 109-99-9, Tetrahydrofuran, uses **110-67-8**, 3-Methoxypropionitrile 110-71-4 872-50-4, N-Methyl pyrrolidone, uses  
(aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

IT 14874-70-5D, Tetrafluoroborate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanedium salts 14874-70-5D, Tetrafluoroborate, tetraalkylammonium salts 14874-70-5D, Tetrafluoroborate, tetrakis(dialkylamino) phosphonium salts 16919-18-9D, Hexafluorophosphate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanedium salts 16919-18-9D, Hexafluorophosphate, tetraalkylammonium salts 16919-18-9D, Hexafluorophosphate, tetrakis(dialkylamino) phosphonium salts  
(liq. **electrolyte** made of; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

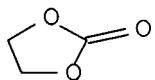
L39 ANSWER 9 OF 19 HCA COPYRIGHT 2007 ACS on STN  
136:88337 Dye-sensitized photoelectric transducer. Yanagida, Shozo; Ikeda, Masaaki; Shigaki, Koichiro; Inoue, Teruhisa (Nippon Kayaku Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002001667 A1  
**20020103**, 25 pp. DESIGNATED STATES: W: CA, CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP5452 20010626. PRIORITY: JP 2000-195464 20000629.

AB The invention aims at developing an expensive photoelec. transducer exhibiting a high conversion efficiency. The solar **battery**, using the photoelec. transducer, comprises a thin film made of semiconductor fine particles sensitized by having a specific azo dye supported thereon. The photoelec. transducer contains arom. group to which at least one group, selected from carboxyl, hydroxyl,

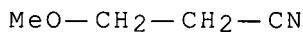
phosphoric acid, phosphoric ester, or mercapto, is bonded either directly or indirectly. Another arom. group is substituted by, at least one, electron-donating group.

IT **96-49-1**, Ethylene carbonate  
(dye-sensitized photoelec. transducer for solar **battery**)

)  
RN 96-49-1 HCA  
CN 1,3-Dioxolan-2-one (CA INDEX NAME)

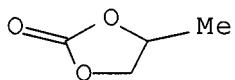


IT **110-67-8**  
(dye-sensitized photoelec. transducer for solar **battery**)  
)  
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01M014-00  
ICS H01L031-04  
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76, 77  
IT Dyes  
Photoelectric devices  
Semiconductor materials  
Solar cells  
(dye-sensitized photoelec. transducer for solar **battery**)  
)  
IT Transducers  
(photoelec.; dye-sensitized photoelec. transducer for solar  
**battery**)  
IT 101-51-9 3566-94-7 6434-57-7 7440-06-4, Platinum, uses  
13463-67-7, Titania, uses 14847-54-2 57741-47-6 61212-66-6  
85720-86-1 93935-92-3 141460-19-7 386206-87-7 386206-88-8  
386206-89-9 386206-90-2 386206-91-3 386206-92-4 386206-93-5  
386206-94-6 386206-95-7 386206-97-9 386207-00-7 386207-03-0  
386207-05-2 386207-06-3 386207-07-4 386207-08-5 386207-09-6  
386207-10-9 386207-11-0 386207-12-1 386207-13-2 386207-14-3

386207-15-4 386207-16-5 386207-17-6 386207-18-7 386207-19-8  
 386207-20-1 386207-21-2 386207-22-3 386207-23-4 386213-80-5  
 (dye-sensitized photoelec. transducer for solar **battery**)  
 )  
 IT 96-49-1, Ethylene carbonate 7550-45-0, Titanium tetrachloride, uses 10377-51-2, Lithium iodide (dye-sensitized photoelec. transducer for solar **battery**)  
 )  
 IT 75-05-8, Acetonitrile, reactions 110-67-8 631-40-3, Tetra(propylammonium) iodide 7553-56-2, Iodine, reactions 118676-08-7 218151-78-1 (dye-sensitized photoelec. transducer for solar **battery**)  
 )  
 L39 ANSWER 10 OF 19 HCA COPYRIGHT 2007 ACS on STN  
 133:225554 Nonaqueous **electrolyte** solutions containing cyanoethyl compounds and nonaqueous (lithium) secondary **batteries**. Toriida, Masahiro; Omi, Katsuhiko; Tan, Hiroaki (Mitsui Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000243444 A **20000908**, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-41104 19990219.  
 AB The solns. are nonaq. solvents contg. RO(R1O)nCH<sub>2</sub>CH<sub>2</sub>CN (R = H, C<sub>1</sub>-10 hydrocarbon, cyanoethyl; R<sub>1</sub> = C<sub>1</sub>-4 alkylene; n = integer or 0-30) and **electrolytes**. The solns. may also contain linear carbonate esters and/or cyclic carbonate esters given in Markush structures. Secondary **batteries**, esp. lithium ion **batteries**, comprising the **electrolyte** solns. are also claimed. **Batteries** with excellent charge-discharge characteristics and high performance, under loaded conditions and low-temp., are obtained.  
 IT 108-32-7, Propylene carbonate **110-67-8**  
**2141-62-0**  
 (secondary (lithium) **batteries** comprising of nonaq. solvents contg. cyanoethyl compds.)  
 RN 108-32-7 HCA  
 CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

EtO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M010-40  
ICS H01M004-58  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lithium secondary **battery** nonaq **electrolyte**;  
**electrolyte** soln cyanoethyl additive secondary  
**battery**; cyclic carbonate nonaq **electrolyte**  
secondary **battery**; linear carbonate nonaq  
**electrolyte** secondary **battery**; carbonate nonaq  
**electrolyte** secondary **battery**  
IT Secondary **batteries**  
(lithium; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)  
IT **Battery electrolytes**  
(secondary (lithium) **batteries** comprising of nonaq.  
solvents contg. cyanoethyl compds.)  
IT Lithium alloy, base  
(anode; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)  
IT 12190-79-3, HLC 21  
(HLC 21, cathode; secondary (lithium) **batteries**  
comprising of nonaq. solvents contg. cyanoethyl compds.)  
IT 7439-93-2, Lithium, uses 7440-44-0, MCMB 6-28, uses  
(anode; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)  
IT 105-58-8, Diethyl carbonate **108-32-7**, Propylene carbonate  
**110-67-8** 616-38-6, Dimethyl carbonate 623-53-0, Methyl  
ethyl carbonate 1656-48-0, Bis(2-cyanoethyl) ether  
**2141-62-0** 3386-87-6 4437-85-8, Butylene carbonate  
35633-50-2  
(secondary (lithium) **batteries** comprising of nonaq.  
solvents contg. cyanoethyl compds.)

L39 ANSWER 11 OF 19 HCA COPYRIGHT 2007 ACS on STN  
132:210209 Secondary nonaqueous-**electrolyte batteries**

with **electrolytes** containing cyanoethoxy compounds.

Kobayashi, Aya; Izuchi, Shuichi (Yuasa Battery Co., Ltd., Japan).

Jpn. Kokai Tokkyo Koho JP 2000077096 A **20000314**, 5 pp.

(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-244674 19980831.

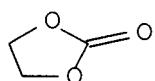
AB Claimed **batteries** are equipped with **electrolytes** contg. cyanoethoxy compds.  $R(OC_2H_4CN)_n$  ( $n = 1-4$ ;  $R = C_mH_{2m+2-n}$ ,  $C_mH_{2m+2-n}(OC_2H_4)_p$ ,  $C_mH_{2m+2-n}CO$ , or  $C_mH_{2m+2-n}OCO$ ;  $m = 1-3$ ;  $p = 1-4$ ) as nonaq. solvents for Li salts. Optionally, the **batteries** are equipped with gelled polymer **electrolytes**. The **batteries** have long cycle life at low temp.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **110-67-8** **2141-62-0**

(solvents; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

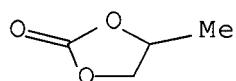
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



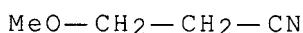
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



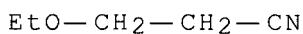
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST cyanoethoxy compd nonaq **electrolyte** solvent  
**battery**; lithium **battery electrolyte**  
solvent cyanoethoxy compd  
IT Secondary **batteries**  
(lithium; nonaq. **batteries** with **electrolytes**  
contg. cyanoethoxy compds. for long cycle life at low temp.)  
IT **Battery electrolytes**  
(nonaq. **batteries** with **electrolytes** contg.  
cyanoethoxy compds. for long cycle life at low temp.)  
IT Polyoxyalkylenes, uses  
(trifunctional acrylates, lithium complexes, gelled  
**electrolytes**; nonaq. **batteries** with  
**electrolytes** contg. cyanoethoxy compds. for long cycle  
life at low temp.)  
IT 14283-07-9, Lithium tetrafluoroborate  
(**electrolytes**; nonaq. **batteries** with  
**electrolytes** contg. cyanoethoxy compds. for long cycle  
life at low temp.)  
IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium  
complexes  
(gelled **electrolytes**; nonaq. **batteries** with  
**electrolytes** contg. cyanoethoxy compds. for long cycle  
life at low temp.)  
IT 96-48-0,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate  
**108-32-7**, Propylene carbonate **110-67-8**  
1656-48-0, Bis-2-cyanoethyl ether **2141-62-0** 3386-87-6  
5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate  
35633-51-3 260362-83-2  
(solvents; nonaq. **batteries** with **electrolytes**  
contg. cyanoethoxy compds. for long cycle life at low temp.)

L39 ANSWER 12 OF 19 HCA COPYRIGHT 2007 ACS on STN

132:183113 Secondary nonaqueous **electrolyte batteries**

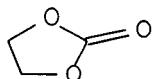
. Tabuchi, Toru; Aoki, Takashi; Nakamitsu, Kazuhiro; Mizutani,  
Minoru (Japan Storage Battery Co., Ltd., Japan; GS Melcotec K. K.).  
Jpn. Kokai Tokkyo Koho JP 2000067913 A **20000303**, 7 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-305833 19981027.  
PRIORITY: JP 1998-159629 19980608.

AB The **batteries** use a nonaq. Li salt **electrolyte** soln. contg. a cyano  
group contg. ether or glycol and a carbonate ester.

IT **96-49-1**, Ethylene carbonate **110-67-8**  
(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycols and carbonate esters for secondary lithium

batteries)

RN 96-49-1 HCA  
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

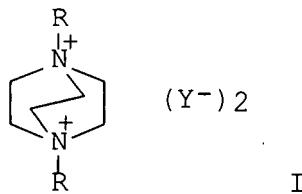
MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary lithium **battery electrolyte** soln  
compn; lithium **battery electrolyte** cyano ether  
carbonate ester; cyano glycol carbonate ester lithium  
**battery electrolyte**  
IT **Battery electrolytes**  
(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycals and carbonate esters for secondary lithium  
**batteries**)  
IT 96-49-1, Ethylene carbonate 110-67-8 623-53-0,  
Ethyl methyl carbonate 3386-87-6 21324-40-3, Lithium  
hexafluorophosphate  
(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycals and carbonate esters for secondary lithium  
**batteries**)

L39 ANSWER 13 OF 19 HCA COPYRIGHT 2007 ACS on STN  
132:8268 Novel **electrolytes** for electrochemical double layer  
capacitors. Maletin, Yurii; Strizhakova, Natalie; Izotov, Vladimir;  
Mironova, Antonia; Danilin, Valery; Kozachov, Sergey (Superfarad  
Ltd., UK). PCT Int. Appl. WO 9960587 A1 **19991125**, 22 pp.  
DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,  
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,  
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,  
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,  
SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG,  
KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE,

DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP3412 19990518. PRIORITY: UA 1998-52573 19980518.

GI

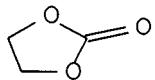


AB Novel org. **electrolytes** comprising tetrafluoroborates and hexafluorophosphates of doubly charged cations of N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanedium (DADACO) are disclosed, which have the general formula I, where R = C1-C4 alkyl and Y- = BF4- or PF6-. The compds. are dissolved in an aprotic polar solvent or a mixt. of such solvents to form **electrolytes** for electrochem. double layer capacitors.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **110-67-8**, 3-Methoxypropionitrile (solvent; **electrolytes** for electrochem. double layer capacitors contg.)

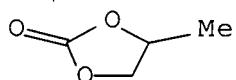
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038  
CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 72  
ST **electrolyte** electrochem double layer capacitor;  
alkyldiazabicyclooctanediium tetrafluoroborate hexafluorophosphate  
**electrolyte** electrochem double layer capacitor; fluoroborate  
dialkyldiazabicyclooctanediium **electrolyte** electrochem  
double layer capacitor; fluorophosphate  
dialkyldiazabicyclooctanediium **electrolyte** electrochem  
double layer capacitor; polar solvent **electrolyte**  
electrochem double layer capacitor  
IT Capacitors  
(double layer; **electrolytes** for electrochem. double  
layer capacitors)  
IT **Electrolytes**  
(**electrolytes** for electrochem. double layer capacitors)  
IT Polar solvents  
(**electrolytes** for electrochem. double layer capacitors  
contg.)  
IT 429-06-1, Tetraethylammonium tetrafluoroborate 69282-14-0  
120099-85-6 120099-88-9  
(**electrolytes** for electrochem. double layer capacitors  
contg.)  
IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses  
78-93-3, 2-Butanone, uses 96-48-0,  $\gamma$ -Butyrolactone  
**96-49-1**, Ethylene carbonate 107-12-0, Propionitrile  
108-29-2,  $\gamma$ -Valerolactone **108-32-7**, Propylene  
carbonate 109-99-9, Tetrahydrofuran, uses **110-67-8**,  
3-Methoxypropionitrile 110-71-4 872-50-4, 1-Methyl-2-  
pyrrolidinone, uses  
(solvent; **electrolytes** for electrochem. double layer  
capacitors contg.)

L39 ANSWER 14 OF 19 HCA COPYRIGHT 2007 ACS on STN  
130:252076 Preparation of alcohol cyanoethyl ethers for lithium  
**batteries** and organic **electrolytic** solutions  
containing them. Nishikawa, Satoshi (Sunstar Engineering, Inc.,  
Japan; Uni Sunstar Bv). Jpn. Kokai Tokkyo Koho JP 11080112 A  
**19990326** Heisei, 9 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1997-245178 19970910.

AB (R1O)<sub>a</sub>R<sub>2</sub>(OCH<sub>2</sub>CH<sub>2</sub>CN)<sub>b</sub> (I; R<sub>1</sub> = C<sub>11-3</sub> alkyl; R<sub>2</sub> = residue of alcs. having 1-4 OH groups; a = 0-3; b = 1-4; a + b = 1-4) are prep'd. by cyanoethylation of alcs. with acrylonitrile (II) in the presence of  $\geq 1$  selected from (a) LiOH and (b) Li metal, Li alkoxides, compds. comprising Li and active methylene compds. such as Li acetylacetone and in the absence of H<sub>2</sub>O. The org. **electrolyte** solns. for Li **batteries** or Li ion secondary **batteries** comprise I and Li salts dissolved therein. The **electrolyte** solns. may contain aprotic polar compds. This method gives I without discoloration due to polymn. of II. II was added dropwise to a mixt. of ethylene glycol and LiOH.H<sub>2</sub>O at 40-0° over 2 h, and the reaction mixt. was further stirred at 40-50° for 3 h to give ethylene glycol bis(2-cyanoethyl) ether (III) with purity  $\geq 99.5\%$ . LiClO<sub>4</sub> was dissolved in III to give an **electrolyte** soln. showing cond. 2.7 + 10<sup>-3</sup> S·Cm<sup>-1</sup>.

IT 110-67-8P, 2-Cyanoethyl methyl ether 2141-62-0P

(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

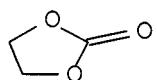
EtO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IT 96-49-1, Ethylene carbonate

(solvent; prep'n. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



IC ICM C07C255-13  
ICS B01J023-04; C07C253-30; H01M010-40; C07B061-00  
CC 23-19 (Aliphatic Compounds)  
Section cross-reference(s): 52  
ST polyol cyanoethyl ether prepn **battery electrolyte**  
; alc cyanoethyl ether prepn **battery electrolyte**  
; acrylonitrile cyanoethylation polyol lithium hydroxide catalyst;  
ethylene glycol cyanoethyl ether **battery**  
**electrolyte**  
IT Polar solvents  
Polar solvents  
(aprotic; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Cyanoethylation  
Cyanoethylation  
(catalysts; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Ethylation catalysts  
Ethylation catalysts  
(cyanoethylation catalysts; prepn. of (poly)alc. cyanoethyl  
ethers as **battery electrolytes** by  
LiOH-catalyzed reaction of polyols and acrylonitrile)  
IT Primary **batteries**  
Secondary **batteries**  
(lithium; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Alcohols, reactions  
(polyhydric; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT **Battery electrolytes**  
(prepn. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and  
acrylonitrile)  
IT Alcohols, reactions  
Glycols, reactions  
Polyoxyalkylenes, reactions  
(prepn. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and  
acrylonitrile)  
IT 7439-93-2, Lithium, uses 18115-70-3, Lithium acetylacetone, uses  
(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 112-27-6P  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 110-47-4P **110-67-8P**, 2-Cyanoethyl methyl ether  
**2141-62-0P** 2465-91-0P 2465-93-2P 3386-87-6P, Ethylene glycol bis(2-cyanoethyl) ether 6959-71-3P 9003-07-0DP, Polypropylene, triol derivs., bis(2-cyanoethyl)ether 16792-83-9P, Propylene glycol bis(2-cyanoethyl) ether 22397-30-4P 22397-31-5P, Diethylene glycol bis(2-cyanoethyl) ether 25265-71-8DP, Dipropylene glycol, ether with 2-cyanoethyl and Me 35633-45-5P 35633-50-2P 35633-51-3P 39377-81-6P 39927-06-5P, Polyethylene glycol bis(2-cyanoethyl) ether 51299-82-2P 57741-46-5P, Triethylene glycol bis(2-cyanoethyl) ether 59113-36-9DP, Diglycerin, ether with tetrakis(2-cyanoethyl) 61579-08-6P 180316-31-8P, 2,5,8,11-Tetraoxatetradecane-14-nitrile 221628-60-0P 221628-62-2P 221628-64-4P  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 102-71-6, Triethanolamine, reactions 107-13-1, 2-Propenenitrile, reactions 107-21-1, 1,2-Ethanediol, reactions 109-86-4, Ethylene glycol monomethyl ether 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, reactions 111-77-3, Diethylene glycol monomethyl ether 112-35-6, Triethylene glycol monomethyl ether 115-77-5, reactions 122-20-3, Triisopropanolamine 1320-67-8, Propylene glycol monomethyl ether 4439-20-7 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 25618-55-7, 34590-94-8, Dipropylene glycol monomethyl ether 52125-53-8, Propylene glycol monoethyl ether 59113-36-9, Diglycerin  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 7791-03-9, Lithium perchlorate 14283-07-9  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 1310-65-2, Lithium hydroxide  
(prepn. of polyol cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and

acrylonitrile)

IT **96-49-1**, Ethylene carbonate

(solvent; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)

L39 ANSWER 15 OF 19 HCA COPYRIGHT 2007 ACS on STN

126:133588 Nonaqueous **electrolyte batteries** using  
**electrolytes** containing self discharge inhibitors. Jinno,  
Maruo; Uehara, Mayumi; Sakurai, Atsushi; Nishio, Koji; Saito,  
Toshihiko (Sanyo Denki Kk, Japan). Jpn. Kokai Tokkyo Koho JP  
08321312 A **19961203** Heisei, 5 pp. (Japanese). CODEN:  
JKXXAF. APPLICATION: JP 1995-150844 19950524.

AB Li **batteries** use **electrolytes** contg. LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> dissolved in  
high dielec. const. solvent selected from ethylene carbonate,  
propylene carbonate, and butylene carbonate; where the **electrolytes**  
contain 1-20 vol.% additive selected from triethylamine, n-  
butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2-methoxy  
ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile,  
benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-  
dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl  
imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-  
oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me  
sulfide, 2-Me thiophene, 1-butane thiol, benzenethiol, di-Me  
sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite,  
butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-  
thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone,  
DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinate. The  
**electrolytes** may contain 1,2-dimethoxyethane. Since the additives  
react with Li in anodes and the solvents and the solutes in the  
**electrolytes** to form coatings on the anodes for prevention of the  
reaction between the **electrolytes** and the anodes, the **batteries** have  
improved storage property. These **batteries** have long shelf life.

IT **110-67-8**, 3-Methoxypropionitrile

(self discharge inhibitors in nonaq. **electrolyte** solns.  
for lithium **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

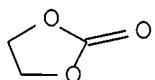
IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene  
carbonate

(solvents for nonaq. **electrolyte** solns. contg. self

discharge inhibitors for lithium **batteries**)

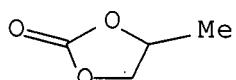
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



IC ICM H01M006-16

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lithium **battery electrolyte** self discharge  
inhibitor

IT **Battery electrolytes**

(self discharge inhibitors in nonaq. **electrolyte** solns.  
for lithium **batteries**)

IT 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate  
33454-82-9, Lithium trifluoromethanesulfonate  
(nonaq. **electrolyte** solns. contg. self discharge  
inhibitors for lithium **batteries**)

IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5,  
Dimethylsulfoxide, uses 67-71-0, Dimethylsulfone 68-12-2,  
N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7,  
Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane,  
uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9,  
N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses  
107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses  
109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses  
109-79-5, 1-Butanethiol **110-67-8**, 3-Methoxypropionitrile  
110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0,  
Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4,  
Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole  
290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8,  
3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2,

Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5,  
Ethylmethylsulfide 666-15-9 872-50-4, N-Methyl-2-pyrrolidone,  
uses 1193-10-8, 3-Methylsulfolene 1912-28-3, Methyl ethyl  
sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine  
15980-15-1, 1,4-Thioxane 19836-78-3 28452-93-9, Butadienesulfone  
(self discharge inhibitors in nonaq. **electrolyte** solns.  
for lithium **batteries**)

IT 96-49-1, Ethylene carbonate **108-32-7**, Propylene  
carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene  
carbonate  
(solvents for nonaq. **electrolyte** solns. contg. self  
discharge inhibitors for lithium **batteries**)

L39 ANSWER 16 OF 19 HCA COPYRIGHT 2007 ACS on STN

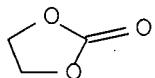
125:345282 Nonaqueous **electrolytic** solution with high electric  
conductivity for electrochemical capacitor. Ue, Makoto; Takeda,  
Masayuki; Takehara, Masahiro (Mitsubishi Chemical Corp., Japan).  
Jpn. Kokai Tokkyo Koho JP 08250378 A **19960927** Heisei, 4  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-48743  
19950308.

AB The soln. contains a quaternary ammonium salt R1R2R3N+R4.Et3B-Me (R1-  
4 = C1-4 alkyl) and a bipolar aprotic solvent. The soln. showed  
improved elec. cond.

IT 96-49-1, Ethylene carbonate **108-32-7**, Propylene  
carbonate **110-67-8**, 3-Methoxypropionitrile  
(solvent; nonaq. **electrolytic** capacitor soln. contg.  
quaternary ammonium salt with high elec. cond.)

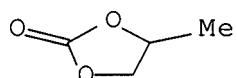
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038  
CC 76-10 (Electric Phenomena)  
ST **electrolytic** capacitor soln quaternary ammonium salt;  
bipolar aprotic solvent **electrolytic** capacitor soln;  
borate ammonium **electrolytic** capacitor nonaq soln  
IT Quaternary ammonium compounds, uses  
(nonaq. **electrolytic** capacitor soln. contg. quaternary  
ammonium salt with high elec. cond.)  
IT Electric capacitors  
(**electrolytic**, nonaq. **electrolytic** capacitor  
soln. contg. quaternary ammonium salt with high elec. cond.)  
IT 183858-41-5 183858-43-7  
(nonaq. **electrolytic** capacitor soln. contg. quaternary  
ammonium salt with high elec. cond.)  
IT 75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
**96-49-1**, Ethylene carbonate 105-58-8, Diethyl carbonate  
108-29-2,  $\gamma$ -Valerolactone **108-32-7**, Propylene  
carbonate **110-67-8**, 3-Methoxypipronitrile 126-33-0,  
Sulfolane 512-56-1, Trimethyl phosphate 542-28-9,  
 $\delta$ -Valerolactone 616-38-6 623-53-0, Ethyl methyl carbonate  
872-93-5, 3-Methylsulfolane 4437-69-8, Isobutylene carbonate  
4437-85-8, Butylene carbonate  
(solvent; nonaq. **electrolytic** capacitor soln. contg.  
quaternary ammonium salt with high elec. cond.)

L39 ANSWER 17 OF 19 HCA COPYRIGHT 2007 ACS on STN  
122:145421 Model for oxide film growth in aluminum anodization. Izotov,  
V. Yu.; Maletin, Yu. A.; Koval, L. B.; Mironova, A. A.; Kozachkov,  
S. G.; Nezdrovin, V. P. (V. I. Vernadsky Inst., National Acad. Sci.  
Ukraine, Kiev, 252680, Ukraine). Teoreticheskaya i  
Eksperimental'naya Khimiya, 30(5), 272-6 (Russian) **1994**.

CODEN: TEKHA4. ISSN: 0497-2627. Publisher: Institut Fizicheskoi  
Khimii im. L. V. Pisarzhevskogo AN Ukrains.

AB A theor. model was developed to describe the formation of amorphous  
or polycryst. oxide films on the surface of Al during its  
anodization. Satisfactory agreement between the model and exptl.  
data on anodization in **electrolytes** based on various dicarboxylic  
acids is illustrated.

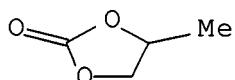
IT **108-32-7**, Propylene carbonate **110-67-8**,

3-Methoxypropionitrile

(aluminum anodization in baths contg. various solvents and salts)

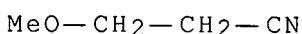
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-7 (Electrochemistry)

Section cross-reference(s): 56

IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses

79-16-3, N-Methylacetamide 96-48-0,  $\gamma$ -Butyrolactone

107-21-1, Ethylene glycol, uses 108-32-7, Propylene

carbonate 110-67-8, 3-Methoxypropionitrile 111754-40-6,

Tetraethylammonium maleate, uses

(aluminum anodization in baths contg. various solvents and salts)

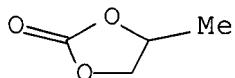
L39 ANSWER 18 OF 19 HCA COPYRIGHT 2007 ACS on STN

107:248434 **Electrolyte** solution of quaternary ammonium salts for **electrolytic** capacitors. Mori, Shoichiro; Ue, Makoto (Mitsubishi Petrochemical Co., Ltd., Japan). Eur. Pat. Appl. EP 227433 A2 **19870701**, 13 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1986-309882 19861217. PRIORITY: JP 1985-286980 19851220; JP 1985-286982 19851220; JP 1986-98673 19860428.

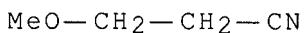
AB An **electrolyte** soln. for use in an **electrolytic** capacitor comprises as a solute  $\geq 1$  quaternary  $\text{NH}_4^+$  salt of a carboxylic acid which is selected from 5-40 wt.% of (a) maleic acid and/or citraconic acid or (b) 7-30 wt.% of an arom. carboxylic acid or (c) 1-40 wt.% of a branched-chain aliph. dicarboxylic acid. In (c) the salt has 11-30 C atoms. The **electrolyte** soln. has high elec. cond. when used, e.g., with Al foil electrodes. The solvent is aprotic, preferably an amide or lactone.

IT **108-32-7**, Propylene carbonate **110-67-8**  
(**electrolytes** contg., for capacitors)

RN 108-32-7 HCA  
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-02  
CC 76-10 (Electric Phenomena)  
ST quaternary ammonium salt **electrolyte** capacitor; maleate  
**electrolyte** capacitor; citraconate **electrolyte**  
capacitor; arom carboxylate capacitor **electrolyte**; aliph  
dicarboxylate capacitor **electrolyte**  
IT Quaternary ammonium compounds, uses and miscellaneous  
(**electrolytes** contg., for capacitors)  
IT Amides, uses and miscellaneous  
Carboxylic acids, uses and miscellaneous  
Lactones  
(aliph., **electrolytes** contg., for capacitors)  
IT Carboxylic acids, uses and miscellaneous  
(aryl, **electrolytes** contg., for capacitors)  
IT Electric capacitors  
(**electrolytic**, quaternary ammonium salts as  
**electrolytes** for)  
IT 68-12-2, N,N-Dimethylformamide, uses and miscellaneous 96-48-0,  
 $\gamma$ -Butyrolactone 107-21-1, uses and miscellaneous  
**108-32-7**, Propylene carbonate **110-67-8** 512-56-1,  
Trimethyl phosphate 3774-74-1, Tetraethylammonium salicylate  
3774-75-2, Tetraethylammonium  $\gamma$ -resorcylate 16909-22-1,  
Tetraethylammonium benzoate 68570-55-8, Tetraethylammonium  
p-nitrobenzoate 68874-26-0 111754-37-1 111754-38-2  
111754-39-3 111754-40-6 111754-42-8 111754-43-9 111754-45-1  
111754-46-2 111754-47-3 111754-48-4 111754-50-8 111754-52-0  
111754-54-2 111778-54-2  
(**electrolytes** contg., for capacitors)

L39 ANSWER 19 OF 19 HCA COPYRIGHT 2007 ACS on STN

93:17877 Nonaqueous **electrolytic** capacitor **electrolyte**

. Finkelstein, Manuel; Dunkl, Franz S.; Ross, Sidney D. (Sprague Electric Co., USA). U.S. US 4189761 **19800219**, 5 pp.

(English). CODEN: USXXAM. APPLICATION: US 1977-824147 19770812.

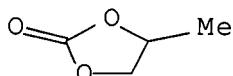
AB Solutes for use in nonaq. solvents, esp. 4-butyrolactone, are described. The solvents are alkyl-substituted ammonium dialkylphosphate salts, which are obtained from the reaction of trialkylphosphate and a cyclic amine or an aliph. tertiary amine. In particular, the trialkylphosphates can be trimethyl-, triethyl-, or tributylphosphate. The amine can be morpholine, N-methylmorpholine, piperidine, piperazine, triethylamine, or tributylamine. A set of 6 Al **electrolytic** capacitors was constructed using the following **electrolyte** formulation: 20 g N-ethylpiperidinium diethylphosphate, 120 g 4-butyrolactone, and 3 g H<sub>2</sub>O. The capacitors were of 250 V rating. For life testing at 200 V d.c. and 125°, the capacitance and dissipation factor did not change significantly after 2000 h and leakage current improved. The capacitors also showed excellent temp. stability.

IT **108-32-7 110-67-8**

(elec. capacitors with nonaq. **electrolytes** from)

RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC H01G009-02

INCL 361433000

CC 76-3 (Electric Phenomena)

ST **electrolyte** aluminum capacitor

IT Electric capacitors

(**electrolytic**, nonaq. **electrolyte** for)

IT 5802-67-5 69083-17-6 73918-58-8 73918-59-9 73918-60-2  
73918-61-3 73918-62-4 73918-63-5 73918-64-6 73918-65-7

73918-66-8

(elec. capacitors contg. nonaq. **electrolyte** from)

IT 68-12-2, uses and miscellaneous 96-48-0 107-21-1, uses and  
miscellaneous **108-32-7 110-67-8** 111-76-2  
111-77-3

(elec. capacitors with nonaq. **electrolytes** from)

=> D L48 1-10 CBIB ABS HITSTR HITIND

L48 ANSWER 1 OF 10 HCA COPYRIGHT 2007 ACS on STN  
143:29529 Nonaqueous **electrolytes** having an extended  
temperature range for **battery** applications. Sun, Luying  
(USA). U.S. Pat. Appl. Publ. US 2005123835 A1 20050609, 17 pp.  
(English). CODEN: USXXCO. APPLICATION: US 2003-731268 20031209.

AB The present invention discloses non-aq. **electrolytes** having an  
extended temp. range for **battery** applications. The **electrolyte**  
comprises an **electrolyte** salt, e.g., LiPF<sub>6</sub>, a first non-aq. solvent,  
and a second non-aq. solvent. The **electrolyte** of the present  
invention has higher ionic cond., lower f.p., and lower vapor  
pressure at high temp. than com. **electrolytes**. These non-aq.  
**electrolytes** can be used, for example, in lithium-ion **batteries**.  
Methods of making lithium-ion **batteries** are also described.

IT 110-67-8, 3-Methoxypropionitrile 2141-62-0,  
3-Ethoxypropionitrile 7791-03-9, Lithium perchlorate  
14283-07-9, Lithium tetrafluoroborate 15365-14-7,  
Iron lithium phosphate felipo4 21324-40-3, Lithium  
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate  
90076-65-6  
(nonaq. **electrolytes** having extended temp. range for  
**battery** applications)

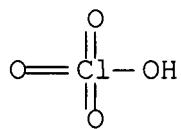
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

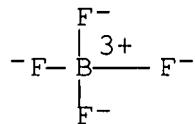
EtO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 7791-03-9 HCA  
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



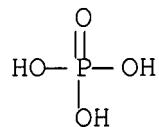
● Li

RN 14283-07-9 HCA  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li<sup>+</sup>

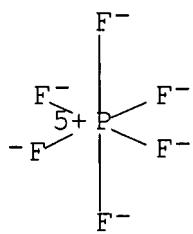
RN 15365-14-7 HCA  
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

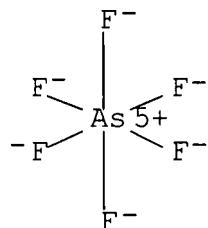
● Li

RN 21324-40-3 HCA  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



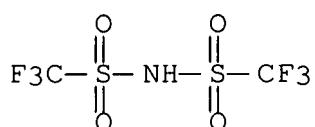
● Li<sup>+</sup>

RN 29935-35-1 HCA  
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 90076-65-6 HCA  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 ICS H01M004-52; H01M004-50; H01M004-58

INCL 429326000; 429330000; 429339000; 429231300; 429231100; 429223000;  
429221000; 429224000; 429231800  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72, 76  
ST **battery** nonaq **electrolyte** extended temp range  
IT Electrochromic devices  
Sensors  
    (**electrolyte**; nonaq. **electrolytes** having  
    extended temp. range for **battery** applications)  
IT Secondary **batteries**  
    (lithium; nonaq. **electrolytes** having extended temp.  
    range for **battery** applications)  
IT **Battery electrolytes**  
    **Electrolytic** capacitors  
Fuel **cell electrolytes**  
Ionic conductivity  
    (nonaq. **electrolytes** having extended temp. range for  
    **battery** applications)  
IT Carbonaceous materials (technological products)  
Coke  
    **Esters, uses**  
    **Ethers, uses**  
    (nonaq. **electrolytes** having extended temp. range for  
    **battery** applications)  
IT Sulfonic acids, uses  
    (perfluoro, lithium salt; nonaq. **electrolytes** having  
    extended temp. range for **battery** applications)  
IT Perfluoro compounds  
    (sulfonic acids, lithium salt; nonaq. **electrolytes**  
    having extended temp. range for **battery** applications)  
IT 96-49-1, Ethylene **carbonate** 105-58-8, Diethyl  
**carbonate** 108-32-7, Propylene **carbonate**  
110-67-8, 3-Methoxypropionitrile 463-79-6D, Carbonic acid,  
ester, cyclic 463-79-6D, Carbonic acid, ester, linear 616-38-6,  
Dimethyl **carbonate** 623-53-0, Ethyl methyl  
**carbonate** 1001-55-4, 2-Acetoxyacetonitrile 1656-48-0  
1738-36-9, Methoxyacetonitrile **2141-62-0**,  
3-Ethoxypropionitrile 7782-42-5, Graphite, uses **7791-03-9**  
, Lithium perchlorate 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>)  
12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12190-79-3, Cobalt  
lithium oxide (CoLiO<sub>2</sub>) **14283-07-9**, Lithium  
tetrafluoroborate **15365-14-7**, Iron lithium phosphate  
felipo4 18804-04-1, uses **21324-40-3**, Lithium  
hexafluorophosphate **29935-35-1**, Lithium hexafluoroarsenate  
56756-91-3 62957-60-2, Ethoxyacetonitrile **90076-65-6**  
260362-83-2 311346-25-5, Cobalt lithium nickel oxide  
(Co0.1-0.9LiNi0.1-0.902) 852995-04-1

(nonaq. **electrolytes** having extended temp. range for  
**battery** applications)

L48 ANSWER 2 OF 10 HCA COPYRIGHT 2007 ACS on STN

135:21865 Fabrication of Solid-State Dye-Sensitized TiO<sub>2</sub> Solar

**Cell** Using Polymer **Electrolyte**. Matsumoto,  
Masamitsu; Wada, Yuji; Kitamura, Takayuki; Shigaki, Kouichiro;  
Inoue, Teruhisa; Ikeda, Masaaki; Yanagida, Shozo (Material and Life  
Science, Graduate School of Engineering, Osaka University, Suita,  
Osaka, 565-0871, Japan). Bulletin of the Chemical Society of Japan,  
74(2), 387-393 (English) 2001. CODEN: BCSJA8. ISSN:  
0009-2673. Publisher: Chemical Society of Japan.

AB A solid-state dye-sensitized TiO<sub>2</sub> solar cell has been fabricated with  
a polymer **electrolyte** constructed with  $\alpha$ -methacryloyl-[piv]-  
methoxyocta(oxyethylene) or 2-(2-methoxyethoxy)ethyl acrylate as a  
base polymer,  $\alpha$ -acryloyl-[piv] -  
acryloyloxyocta(oxyethylene)octa(ethylenegly col) dimethacrylate as a  
crosslinking agent and 3- methoxypropiononitrileas a plasticizer.  
The polymer is in-situ polymd. at the porous TiO<sub>2</sub> film by photo-  
irradn. and the resulting film is immersed into the liq. **electrolyte**  
in order to introduce the **electrolyte** to the polymer phase. The  
cond. of the polymer **electrolyte** reached 2.67 mS/cm<sup>1</sup>. The energy  
conversion efficiency of the solid-state cell was 2.62% underirradn.  
of simulated sunlight (AM 1.5, 1 kW/m<sup>2</sup>), achieving 86.4% of the cell  
efficiency using the liq. **electrolyte**.

IT 342807-86-7 342807-87-8 342807-88-9

(fabrication of solid-state dye-sensitized titania solar  
cell using polymer **electrolyte**)

RN 342807-86-7 HCA

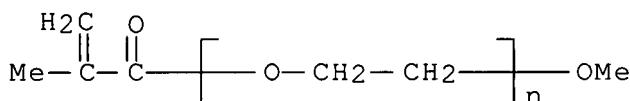
CN Propanenitrile, 3-methoxy-, polymer with  $\alpha$ -(2-methyl-1-oxo-2-  
propenyl)- $\omega$ -methoxypoly(oxy-1,2-ethanediyl) and  
 $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -[(2-methyl-1-oxo-2-  
propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 26915-72-0

CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>5</sub> H<sub>8</sub> O<sub>2</sub>

CCI PMS

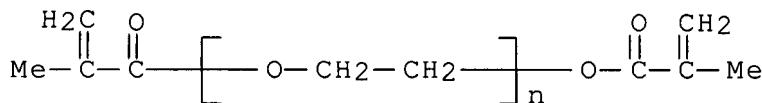


CM 2

CRN 25852-47-5

CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>8</sub> H<sub>10</sub> O<sub>3</sub>

CCI PMS



CM 3

CRN 110-67-8

CMF C<sub>4</sub> H<sub>7</sub> N O

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 342807-87-8 HCA

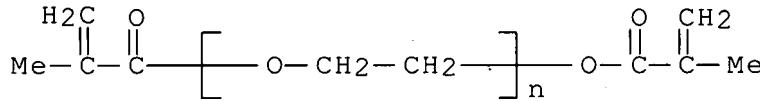
CN 2-Propenoic acid, 2-(2-methoxyethoxy)ethyl ester, polymer with 3-methoxypropanenitrile and  $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 25852-47-5

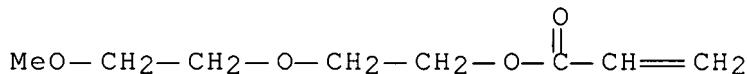
CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C<sub>8</sub> H<sub>10</sub> O<sub>3</sub>

CCI PMS



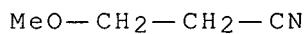
CM 2

CRN 7328-18-9  
CMF C8 H14 O4



CM 3

CRN 110-67-8  
CMF C4 H7 N O

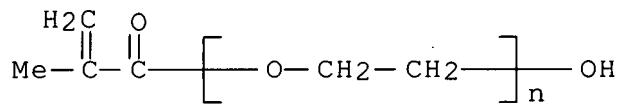


RN 342807-88-9 HCA

CN Propanenitrile, 3-methoxy-, polymer with  $\alpha$ -(2-methyl-1-oxo-2-propenyl)- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

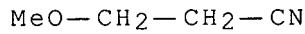
CM 1

CRN 25736-86-1  
CMF (C<sub>2</sub> H<sub>4</sub> O)<sub>n</sub> C4 H6 O2  
CCI PMS



CM 2

CRN 110-67-8  
CMF C4 H7 N O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 72, 76

ST solid dye sensitized titania solar cell; polymer **electrolyte**  
solar **cell** sensitized titania

IT Photoelectrochemical cells  
Polymer **electrolytes**  
(fabrication of solid-state dye-sensitized titania solar  
**cell** using polymer **electrolyte**)

IT 9016-69-7 9065-89-8 13463-67-7, Titania, uses 108927-94-2  
131681-30-6 **342807-86-7** **342807-87-8**  
**342807-88-9**  
(fabrication of solid-state dye-sensitized titania solar  
**cell** using polymer **electrolyte**)

L48 ANSWER 3 OF 10 HCA COPYRIGHT 2007 ACS on STN  
133:275273 **Electrolyte** solutions and **electrolytic**  
capacitors using thereof. Tamamitsu, Kenji (Nippon Chemi-Con Corp.,  
Japan). Jpn. Kokai Tokkyo Koho JP 2000269088 A **20000929**,  
7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-75360  
19990319.

AB The **electrolytic** soln. for the capacitors comprise a non-hydrolyzing  
solvent at pH>7, quaternized cyclic ammonium salt, and/or a  
quaternary ammonium salt. The compns. in the **electrolyte** soln. does  
not require regeneration of leaked liq. such as quaternized ammonium  
salts.

IT **2141-62-0**, 3-Ethoxypropionitrile  
(**electrolyte** solns. and **electrolytic**  
capacitors using thereof)

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

E<sub>TO</sub>—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-035

CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 72

ST cyclic quaternary ammonium salt **electrolyte** capacitor

IT **Electrolytic** capacitors  
(**electrolyte** solns. and **electrolytic**  
capacitors using thereof)

IT Solvents

(non-hydrolyzing in base soln.; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT Quaternary ammonium compounds, properties  
(salt, cyclic; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT **Electrolytes**  
(soln.; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT 75-05-8, Acetonitrile, properties 75-52-5, Nitromethane, properties 110-67-8, 3-Methoxypropionitrile 126-33-0, Sulfolane 872-50-4, N-Methylpyrrolidone, properties 872-93-5, 3-Methylsulfolane 1003-78-7, 2,4-Dimethylsulfolane  
**2141-62-0**, 3-Ethoxypropionitrile  
(**electrolyte** solns. and **electrolytic** capacitors using thereof)

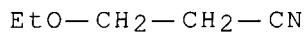
L48 ANSWER 4 OF 10 HCA COPYRIGHT 2007 ACS on STN  
133:225554 Nonaqueous **electrolyte** solutions containing cyanoethyl compounds and nonaqueous (lithium) secondary **batteries**. Toriida, Masahiro; Omi, Katsuhiko; Tan, Hiroaki (Mitsui Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000243444 A **20000908**, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-41104 19990219.

AB The solns. are nonaq. solvents contg. RO(R1O)nCH<sub>2</sub>CH<sub>2</sub>CN (R = H, C<sub>1</sub>-10 hydrocarbon, cyanoethyl; R<sub>1</sub> = C<sub>1</sub>-4 alkylene; n = integer or 0-30) and **electrolytes**. The solns. may also contain linear carbonate esters and/or cyclic carbonate esters given in Markush structures. Secondary **batteries**, esp. lithium ion **batteries**, comprising the **electrolyte** solns. are also claimed. **Batteries** with excellent charge-discharge characteristics and high performance, under loaded conditions and low-temp., are obtained.

IT **2141-62-0**  
(secondary (lithium) **batteries** comprising of nonaq. solvents contg. cyanoethyl compds.)

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** nonaq **electrolyte**;  
**electrolyte** soln cyanoethyl additive secondary

**battery**; cyclic carbonate nonaq **electrolyte**  
secondary **battery**; linear carbonate nonaq  
**electrolyte** secondary **battery**; carbonate nonaq  
**electrolyte** secondary **battery**

IT Secondary **batteries**  
(lithium; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)

IT **Battery electrolytes**  
(secondary (lithium) **batteries** comprising of nonaq.  
solvents contg. cyanoethyl compds.)

IT Lithium alloy, base  
(anode; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)

IT 12190-79-3, HLC 21  
(HLC 21, cathode; secondary (lithium) **batteries**  
comprising of nonaq. solvents contg. cyanoethyl compds.)

IT 7439-93-2, Lithium, uses 7440-44-0, MCMB 6-28, uses  
(anode; secondary (lithium) **batteries** comprising of  
nonaq. solvents contg. cyanoethyl compds.)

IT 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
110-67-8 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl  
carbonate 1656-48-0, Bis(2-cyanoethyl) ether **2141-62-0**  
3386-87-6 4437-85-8, Butylene carbonate 35633-50-2  
(secondary (lithium) **batteries** comprising of nonaq.  
solvents contg. cyanoethyl compds.)

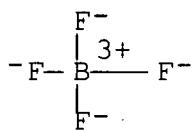
L48 ANSWER 5 OF 10 HCA COPYRIGHT 2007 ACS on STN  
132:210209 Secondary nonaqueous-**electrolyte batteries**  
with **electrolytes** containing cyanoethoxy compounds.  
Kobayashi, Aya; Izuchi, Shuichi (Yuasa Battery Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 2000077096 A **20000314**, 5 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-244674 19980831.

AB Claimed **batteries** are equipped with **electrolytes** contg. cyanoethoxy  
compds.  $R(OC_2H_4CN)_n$  ( $n = 1-4$ ;  $R = C_mH_{2m+2-n}$ ,  $C_mH_{2m+2-n}(OC_2H_4)p$ ,  
 $C_mH_{2m+2-n}CO$ , or  $C_mH_{2m+2-n}OCO$ ;  $m = 1-3$ ;  $p = 1-4$ ) as nonaq. solvents  
for Li salts. Optionally, the **batteries** are equipped with gelled  
polymer **electrolytes**. The **batteries** have long cycle life at low  
temp.

IT **14283-07-9**, Lithium tetrafluoroborate  
(**electrolytes**; nonaq. **batteries** with  
**electrolytes** contg. cyanoethoxy compds. for long cycle  
life at low temp.)

RN 14283-07-9 HCA

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li<sup>+</sup>

IT 110-67-8 2141-62-0

(solvents; nonaq. **batteries** with **electrolytes**  
contg. cyanoethoxy compds. for long cycle life at low temp.)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

Eto—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST cyanoethoxy compd nonaq **electrolyte** solvent  
**battery**; lithium **battery electrolyte**  
solvent cyanoethoxy compd

IT Secondary **batteries**

(lithium; nonaq. **batteries** with **electrolytes**  
contg. cyanoethoxy compds. for long cycle life at low temp.)

IT **Battery electrolytes**

(nonaq. **batteries** with **electrolytes** contg.  
cyanoethoxy compds. for long cycle life at low temp.)

IT Polyoxyalkylenes, uses

(trifunctional acrylates, lithium complexes, gelled  
**electrolytes**; nonaq. **batteries** with  
**electrolytes** contg. cyanoethoxy compds. for long cycle  
life at low temp.)

IT 14283-07-9, Lithium tetrafluoroborate  
(**electrolytes**; nonaq. **batteries** with

**electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes

(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene **carbonate** 108-32-7, Propylene **carbonate** 110-67-8

1656-48-0, Bis-2-cyanoethyl ether 2141-62-0 3386-87-6

5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl

**carbonate** 35633-51-3 260362-83-2

(solvents; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

L48 ANSWER 6 OF 10 HCA COPYRIGHT 2007 ACS on STN

131:76169 Organic **electrolyte** solutions for lithium **batteries** and capacitors. Nishikawa, Satoshi (Sunstar Engineering, Inc., Japan; Uni Sunstar BV). Jpn. Kokai Tokkyo Koho JP 11185808 A 19990709 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-350635 19971219.

AB The **electrolyte** solns. contain an inorg. **electrolyte** salt dissolved in a cyanoethyl compd. (RO)<sub>a</sub>R'OCH<sub>2</sub>CH<sub>2</sub>CN, where R = C1-4 alkyl group, R' = C1-4 alkylene or alkyl group, and a = 0 or 1.

IT 2141-62-0

(solvents contg. cyanoethyl compds. for org. **electrolyte** solns. for lithium **batteries** and capacitors)

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

EtO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M010-40

ICS H01G009-038; H01G009-035

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76

ST lithium **battery electrolyte** solvent cyanoethyl compd; capacitor **electrolyte** solvent cyanoethyl compd

IT Capacitors

(double layer; solvents contg. cyanoethyl compds. for org. **electrolyte** solns. for lithium **batteries** and capacitors)

IT **Battery electrolytes**

(solvents contg. cyanoethyl compds. for org. **electrolyte**

solns. for lithium **batteries** and capacitors)  
IT 110-67-8 1656-48-0, Bis(2-cyanoethyl)ether **2141-62-0**  
3386-87-6 228720-62-5  
(solvents contg. cyanoethyl compds. for org. **electrolyte**  
solns. for lithium **batteries** and capacitors)

L48 ANSWER 7 OF 10 HCA COPYRIGHT 2007 ACS on STN  
130:252076 Preparation of alcohol cyanoethyl ethers for lithium  
**batteries** and organic **electrolytic** solutions  
containing them. Nishikawa, Satoshi (Sunstar Engineering, Inc.,  
Japan; Uni Sunstar Bv). Jpn. Kokai Tokkyo Koho JP 11080112 A  
**19990326** Heisei, 9 pp. (Japanese). CODEN: JKXXAF.

APPLICATION: JP 1997-245178 19970910.

AB (R1O)aR2(OCH<sub>2</sub>CH<sub>2</sub>CN)b (I; R1 = C<sub>11</sub>-3 alkyl; R2 = residue of alcs.  
having 1-4 OH groups; a = 0-3; b = 1-4; a + b = 1-4) are prepd. by  
cyanoethylation of alcs. with acrylonitrile (II) in the presence of  
≥1 selected from (a) LiOH and (b) Li metal, Li alkoxides, compds.  
comprising Li and active methylene compds. such as Li acetylacetone  
and in the absence of H<sub>2</sub>O. The org. **electrolyte** solns. for Li  
**batteries** or Li ion secondary **batteries** comprise I and Li salts  
dissolved therein. The **electrolyte** solns. may contain aprotic polar  
compds. This method gives I without discoloration due to polymn. of  
II. II was added dropwise to a mixt. of ethylene glycol and LiOH·H<sub>2</sub>O  
at 40-0° over 2 h, and the reaction mixt. was further stirred at 40-  
50° for 3 h to give ethylene glycol bis(2-cyanoethyl) ether (III)  
with purity ≥99.5%. LiClO<sub>4</sub> was dissolved in III to give an  
**electrolyte** soln. showing cond. 2.7 + 10<sup>-3</sup> S·Cm<sup>-1</sup>.

IT **110-47-4P** **110-67-8P**, 2-Cyanoethyl methyl ether  
**2141-62-0P** **51299-82-2P**  
(prepn. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and  
acrylonitrile)

RN 110-47-4 HCA

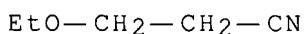
CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)

i-PrO—CH<sub>2</sub>—CH<sub>2</sub>—CN

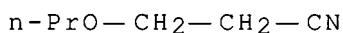
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

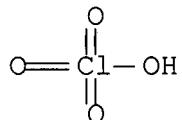


RN 51299-82-2 HCA  
CN Propanenitrile, 3-propoxy- (9CI) (CA INDEX NAME)



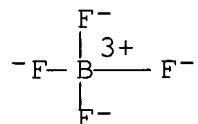
IT **7791-03-9**, Lithium perchlorate **14283-07-9**  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 7791-03-9 HCA  
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

RN 14283-07-9 HCA  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li<sup>+</sup>

IC ICM C07C255-13  
ICS B01J023-04; C07C253-30; H01M010-40; C07B061-00  
CC 23-19 (Aliphatic Compounds)  
Section cross-reference(s): 52  
ST polyol cyanoethyl ether prep **battery electrolyte**  
; alc cyanoethyl ether prep **battery electrolyte**  
; acrylonitrile cyanoethylation polyol lithium hydroxide catalyst;  
ethylene glycol cyanoethyl ether **battery**  
**electrolyte**  
IT Polar solvents  
Polar solvents  
(aprotic; prep. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Cyanoethylation  
Cyanoethylation  
(catalysts; prep. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Ethylation catalysts  
Ethylation catalysts  
(cyanoethylation catalysts; prep. of (poly)alc. cyanoethyl  
ethers as **battery electrolytes** by  
LiOH-catalyzed reaction of polyols and acrylonitrile)  
IT Primary **batteries**  
Secondary **batteries**  
(lithium; prep. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT Alcohols, reactions  
(polyhydric; prep. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)  
IT **Battery electrolytes**  
(prep. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and  
acrylonitrile)  
IT Alcohols, reactions  
Glycols, reactions  
Polyoxyalkylenes, reactions  
(prep. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and  
acrylonitrile)  
IT 7439-93-2, Lithium, uses 18115-70-3, Lithium acetylacetone, uses  
(prep. of (poly)alc. cyanoethyl ethers as **battery**  
**electrolytes** by LiOH-catalyzed reaction of polyols and

acrylonitrile)  
IT 112-27-6P  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT **110-47-4P 110-67-8P**, 2-Cyanoethyl methyl ether  
**2141-62-0P** 2465-91-0P 2465-93-2P 3386-87-6P, Ethylene glycol bis(2-cyanoethyl) ether 6959-71-3P 9003-07-0DP, Polypropylene, triol derivs., bis(2-cyanoethyl)ether 16792-83-9P, Propylene glycol bis(2-cyanoethyl) ether 22397-30-4P 22397-31-5P, Diethylene glycol bis(2-cyanoethyl) ether 25265-71-8DP, Dipropylene glycol, ether with 2-cyanoethyl and Me 35633-45-5P 35633-50-2P 35633-51-3P 39377-81-6P 39927-06-5P, Polyethylene glycol bis(2-cyanoethyl) ether **51299-82-2P** 57741-46-5P, Triethylene glycol bis(2-cyanoethyl) ether 59113-36-9DP, Diglycerin, ether with tetrakis(2-cyanoethyl) 61579-08-6P 180316-31-8P, 2,5,8,11-Tetraoxatetradecane-14-nitrile 221628-60-0P 221628-62-2P 221628-64-4P  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 102-71-6, Triethanolamine, reactions 107-13-1, 2-Propenenitrile, reactions 107-21-1, 1,2-Ethanediol, reactions 109-86-4, Ethylene glycol monomethyl ether 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, reactions 111-77-3, Diethylene glycol monomethyl ether 112-35-6, Triethylene glycol monomethyl ether 115-77-5, reactions 122-20-3, Triisopropanolamine 1320-67-8, Propylene glycol monomethyl ether 4439-20-7 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 25618-55-7 34590-94-8, Dipropylene glycol monomethyl ether 52125-53-8, Propylene glycol monoethyl ether 59113-36-9, Diglycerin  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT **7791-03-9**, Lithium perchlorate **14283-07-9**  
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 1310-65-2, Lithium hydroxide  
(prepn. of polyol cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 96-49-1, Ethylene **carbonate**  
(solvent; prepn. of (poly)alc. cyanoethyl ethers as  
**battery electrolytes** by LiOH-catalyzed reaction  
of polyols and acrylonitrile)

L48 ANSWER 8 OF 10 HCA COPYRIGHT 2007 ACS on STN  
107:189077 Capacitor **electrolyte**. Goshima, Yujiro; Tamura,  
Akira; Saotome, Minoru (Nippon Shokubai Kagaku Kogyo Co., Ltd.,  
Japan). Jpn. Kokai Tokkyo Koho JP 62084508 A **19870418**  
Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
1985-222751 19851008.

AB Nitriles are used as the main solvents in the title soln. Optionally, NCCH<sub>2</sub>CH<sub>2</sub>(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>OR (R = H, C<sub>1</sub>-4 alkyl, CH<sub>2</sub>CH<sub>2</sub>CN, CH<sub>2</sub>COR<sub>1</sub>; R<sub>1</sub> = C<sub>1</sub>-4 alkyl; n = 0-3) and NCCH<sub>2</sub>CO<sub>2</sub>R<sub>2</sub> (R<sub>2</sub> = C<sub>2</sub>-4 alkyl) are used as the nitriles. The soln. is usable at a wide temp. range (from -70° to +190°). Ethylene cyanohydrin was used as the main solvent in a capacitor **electrolyte**.

IT **110-47-4**, 3-Isopropoxypipronitrile **2141-62-0**,  
3-Ethoxypropionitrile **51299-82-2**, 3-Propoxypipronitrile  
(**electrolytes** contg., for **electrolytic**  
capacitors)

RN 110-47-4 HCA

CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)

i-PrO-CH<sub>2</sub>-CH<sub>2</sub>-CN

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

EtO-CH<sub>2</sub>-CH<sub>2</sub>-CN

RN 51299-82-2 HCA  
CN Propanenitrile, 3-propoxy- (9CI) (CA INDEX NAME)

n-PrO-CH<sub>2</sub>-CH<sub>2</sub>-CN

IC ICM H01G009-02  
CC 76-10 (Electric Phenomena)

ST capacitor elec **electrolyte** nitrile  
IT Nitriles, uses and miscellaneous  
    (solvents, in **electrolytes** for **electrolytic**  
    capacitors)  
IT Electric capacitors  
    (**electrolytic**, **electrolytes** contg. nitrile  
    solvents in)  
IT 105-56-6, Ethyl cyanoacetate 109-78-4, Ethylene cyanohydrin  
**110-47-4**, 3-Isopropoxypropionitrile 1116-98-9, tert-Butyl  
cyanoacetate 1656-48-0, Bis(propionitrile) ether **2141-62-0**  
, 3-Ethoxypropionitrile 3386-87-6 5459-58-5, n-Butyl  
cyanoacetate 6959-71-3 10143-54-1, Diethylene glycol  
mono(propionitrile) ether 13361-30-3, Isopropyl cyanoacetate  
14447-15-5, Propyl cyanoacetate 24298-26-8, Ethylene glycol  
mono(propionitrile) ether 35633-50-2, 3-(2-  
Methoxyethoxy)propionitrile 35633-51-3, 3-(2-  
Ethoxyethoxy)propionitrile **51299-82-2**,  
3-Propoxypropionitrile 99764-73-5, 3-tert-Butyoxypipionitrile  
    (**electrolytes** contg., for **electrolytic**  
    capacitors)

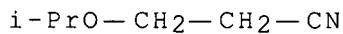
L48 ANSWER 9 OF 10 HCA COPYRIGHT 2007 ACS on STN

61:81607 Original Reference No. 61:14188c-e Electrochemical behavior of  
copper ions and silver ion in hydronitrile and some related  
nitriles. Farha, Floyd, Jr.; Iwamoto, Reynold T. (Univ. of Kansas,  
Lawrence). Journal of Electroanalytical Chemistry (1959-1966),  
8(1), 55-64 (Unavailable) **1964**. CODEN: JEACAX. ISSN:  
0368-1874.

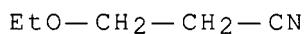
AB In hydronitrile (I), Cu<sup>++</sup> is solvated by the C:N group, whereas  
in 1:1 alc.-nitrile mixts., it is solvated by the OH group. This  
phenomenon is explained on the basis that I (dielec. const. 65), 1:1  
EtOH-acetonitrile (dielec. const. 32), and 1:1 BuOH-propionitrile are  
polar solvent systems and thus favor the more polar solvated form of  
Cu<sup>++</sup>. Thus, in I, the solvent mols. are oriented with the nitrile  
group attached to Cu<sup>++</sup> and the OH group sticking out and forming a  
polar outer sheath; and in 1:1 alc.-nitrile mixt., the alc. rather  
than the nitrile mol. is in the coordination sphere. The nitrile-  
solvated Cu<sup>++</sup> with an outer sheath consisting only of alkyl groups  
behaves like a nonpolar solute. The Cu ions are solvated by the  
trans conformer of I, 3-butenonitrile, and alkoxypropionitriles since  
there is an absence of any solvent effect on the potentials of the Cu  
couples in these solvents. The electrochem. redn. of Ag<sup>+</sup> in I and  
related nitriles is similar to that of Cu<sup>+</sup> except for the fact that  
Ag<sup>+</sup> is reduced at potentials more pos. than Cu<sup>+</sup>.

IT **110-47-4**, Propionitrile, 3-isopropoxy- **2141-62-0**,  
Propionitrile, 3-ethoxy-  
    (solvation of Cu and Ag in)

RN 110-47-4 HCA  
CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)



RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



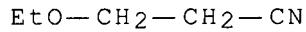
CC 15 (Electrochemistry)  
IT 7440-22-4, Silver  
(redn. (**electrolytic**) of, in nitrile solvents)  
IT 109-75-1, 3-Butenenitrile **110-47-4**, Propionitrile,  
3-isopropoxy- 110-67-8, Propionitrile, 3-methoxy- 542-76-7,  
Propionitrile, 3-chloro- **2141-62-0**, Propionitrile,  
3-ethoxy-  
(solvation of Cu and Ag in)

L48 ANSWER 10 OF 10 HCA COPYRIGHT 2007 ACS on STN  
55:143506 Original Reference No. 55:27044c-d Conductometric study of  
the reaction of some nitriles with hydrogen chloride. Zil'berman,  
E. N.; Ivcher, T. S.; Perepetchikova, E. M. Zhurnal Obshchey  
Khimii, 31, 2037-9 (Unavailable) **1961**. CODEN: ZOKHA4.  
ISSN: 0044-460X.

AB cf. Klages, et al., CA 54, 2241e; 55, 83452. Conductivity isotherms  
at 25° were presented for solns. of dry HCl in adiponitrile, PhCN,  
ClCH<sub>2</sub>CH<sub>2</sub>CN, ClCH<sub>2</sub>CHClCN, and EtOCH<sub>2</sub>CH<sub>2</sub>CN. In all solns. the values  
of cond. rose in time and reached a max. value, while in the initial  
period a min. was observed. The results indicated that such solns.  
were equil. systems contg. various unstable compds. not subject to  
**electrolytic** dissociation themselves.

IT **2141-62-0**, Propionitrile, 3-ethoxy-  
(reaction with HCl)

RN 2141-62-0 HCA  
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



CC 10B (Organic Chemistry: Aliphatic Compounds)  
IT 100-47-0, Benzonitrile 111-69-3, Adiponitrile 542-76-7,  
Propionitrile, 3-chloro- **2141-62-0**, Propionitrile,  
3-ethoxy- 2601-89-0, Propionitrile, 2,3-dichloro-  
(reaction with HCl)

=> D L49 1-7 CBIB ABS HITSTR HITIND

L49 ANSWER 1 OF 7 HCA COPYRIGHT 2007 ACS on STN

140:294908 An improved electrochromic or electrodeposition display and novel process for their manufacture. Liang, Rong-chang; Hou, Jack; Ananthavel, Sundaravel P. (Sipix Imaging, Inc., USA). PCT Int. Appl. WO 2004025356 A2 20040325, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US28540 20030910. PRIORITY: US 2002-409833P 20020910.

AB An electrochromic or electrodeposition display is described comprising a plurality of cells enclosed between the two electrodes, each of the cells comprising (i) surrounding partition walls (microcup), (ii) an electrochromic fluid or **electrolytic** fluid (e.g., silver nitrate in a polymer matrix) filled therein, and (iii) a polymeric sealing layer which encloses the electrochromic fluid or **electrolytic** fluid within each cell and sealingly adheres to the surface of the partition walls. The display device may also have a top electrode plate and a bottom electrode plate, at least one of which is transparent. A method of prep. an electrochromic or electrodeposition display is also described entailing (a) embossing a thermoplastic or thermoset precursor layer with a pre-patterned male mold; (b) hardening the thermoplastics or thermoset precursor layer; (c) releasing the mold from the thermoplastic or thermoset precursor layer; (d) filling the thus-formed array of microcups with an electrochromic or electrodeposition fluid; and (e) sealing the filled microcups.

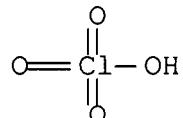
IT **110-67-8**, 3-Methoxypropionitrile.  
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IT **7791-03-9**, Lithium perchlorate  
(**electrolyte**; electrochromic or electrodeposition  
display and fabrication method)  
RN 7791-03-9 HCA  
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

IC ICM G02F001-00  
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 72, 76  
IT Gelatins, uses  
Polyoxyalkylenes, uses  
(**electrolytic** fluid; electrochromic or  
electrodeposition display and fabrication method)  
IT 931-40-8, Glycerin **carbonate**  
(Glycerin **carbonate**, non-aq. solvent; electrochromic or  
electrodeposition display and fabrication method)  
IT **110-67-8**, 3-Methoxypropionitrile.  
(electrochromic solvent; electrochromic or electrodeposition  
display and fabrication method)  
IT **7791-03-9**, Lithium perchlorate 33454-82-9, Lithium  
triflate 35895-70-6, Tetrabutylammonium triflate  
(**electrolyte**; electrochromic or electrodeposition  
display and fabrication method)  
IT 7761-88-8, Silver nitrate, uses 9000-01-5, Gum Arabic 9003-39-8,  
Polyvinylpyrrolidone 9004-62-0, Hydroxyethyl cellulose  
9004-64-2, Hydroxypropyl cellulose 9004-67-5, Methyl cellulose  
25322-68-3, Poly(ethylene oxide)  
(**electrolytic** fluid; electrochromic or  
electrodeposition display and fabrication method)  
IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethyl formamide, uses

75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
108-32-7, Propylene **carbonate** 109-86-4, 2-Methoxyethanol  
109-87-5, Dimethoxymethane 110-80-5, 2-Ethoxyethanol 127-19-5,  
N, N-Dimethylacetamide 617-84-5, Diethyl formamide 872-50-4,  
N-Methylpyrrolidone, uses 1187-58-2, N-Methylpropionic acid amide  
4553-62-2, 2-Methylglutaronitrile  
(non-aq. solvent; electrochromic or electrodeposition display and  
fabrication method)

L49 ANSWER 2 OF 7 HCA COPYRIGHT 2007 ACS on STN

132:183113 Secondary nonaqueous **electrolyte batteries**

. Tabuchi, Toru; Aoki, Takashi; Nakamitsu, Kazuhiro; Mizutani,  
Minoru (Japan Storage Battery Co., Ltd., Japan; GS Melcotec K. K.).  
Jpn. Kokai Tokkyo Koho JP 2000067913 A **20000303**, 7 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-305833 19981027.  
PRIORITY: JP 1998-159629 19980608.

AB The **batteries** use a nonaq. Li salt **electrolyte** soln. contg. a cyano  
group contg. ether or glycol and a **carbonate** ester.

IT **110-67-8 21324-40-3**, Lithium hexafluorophosphate  
(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycols and **carbonate** esters for secondary  
lithium **batteries**)

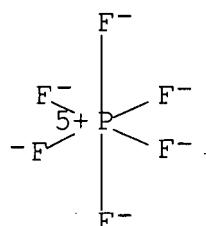
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

IC ICM H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary lithium **battery electrolyte** soln  
compn; lithium **battery electrolyte** cyano ether  
**carbonate** ester; cyano glycol **carbonate** ester  
lithium **battery electrolyte**

IT **Battery electrolytes**

(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycals and **carbonate** esters for secondary  
lithium **batteries**)

IT 96-49-1, Ethylene **carbonate** 110-67-8 623-53-0,

Ethyl methyl **carbonate** 3386-87-6 21324-40-3,

Lithium hexafluorophosphate

(**electrolyte** solvent mixts. contg. cyano ethers or  
cyano glycals and **carbonate** esters for secondary  
lithium **batteries**)

L49 ANSWER 3 OF 7 HCA COPYRIGHT 2007 ACS on STN

131:250338 Novel electrochromic devices based on complementary  
nanocrystalline TiO<sub>2</sub> and WO<sub>3</sub> thin films. Bonhote, Pierre; Gogniat,  
Eric; Gratzel, Michael; Ashrit, P. V. (Laboratoire de photonique et  
interfaces, Departement de Chimie, Ecole Polytechnique Federale de  
Lausanne, Lausanne, CH-1015, Switz.). Thin Solid Films, 350(1,2),  
269-275 (English) 1999. CODEN: THSFAP. ISSN: 0040-6090.

Publisher: Elsevier Science S.A..

AB Electrochromic devices were elaborated based on two complementary  
electrodes made of a nanocryst. metal oxide thin film deposited on  
conducting glass. The first electrode holds a 5  $\mu$ m thick nanocryst.  
TiO<sub>2</sub> film derivatized by a monolayer of a phosphonated triarylamine  
which can be rapidly oxidized by electron transfer to the conducting  
support followed by charge percolation inside the monolayer. The  
oxidn. in accompanied by a blue coloration due to the absorption band  
at 730 nm of the stable triarylamminum radical cation. The second  
electrode bears a 0.2  $\mu$ m thick nanocryst. WO<sub>3</sub> film which turns from  
colorless to blue by redn. and lithium ion insertion. The former  
electrode reaches an absorbance of at least 3 between 700 and 730 nm  
after full oxidn. (16 mC/cm<sup>2</sup>) at 1.0 V vs. NHE while for the second,  
complete redn. at - 1.3 V (74 mC/cm<sup>2</sup>) leads to A = 2.4 at 774 nm. An  
electrochromic device comprising both electrodes sep'd. by an  
**electrolytic** soln. of 0.1 Li<sup>+</sup> in 4,7-dioxaoctanitrile reaches an  
absorbance of 2.2 at 700 nm, 4 s after a voltage step to 1.5 V. The  
system was shown to sustain at least 14,400 coloration-discoloration  
cycles without degrdn.

IT 110-67-8, 3-Methoxypropionitrile 90076-65-6,

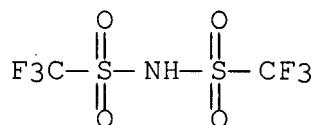
Lithium bis(trifluoromethylsulfonyl)imide

(novel electrochromic devices based on complementary nanocryst.  
TiO<sub>2</sub> and WO<sub>3</sub> thin films)

RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

RN 90076-65-6 HCA  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 66, 72  
IT 75-05-8, Acetonitrile, uses 110-67-8, 3-  
Methoxypropionitrile 90076-65-6, Lithium  
bis(trifluoromethylsulfonyl)imide 174899-82-2,  
1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide  
(novel electrochromic devices based on complementary nanocryst.  
TiO<sub>2</sub> and WO<sub>3</sub> thin films)

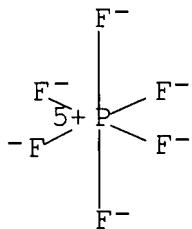
L49 ANSWER 4 OF 7 HCA COPYRIGHT 2007 ACS on STN  
126:133588 Nonaqueous **electrolyte batteries** using  
**electrolytes** containing self discharge inhibitors. Jinno,  
Maruo; Uehara, Mayumi; Sakurai, Atsushi; Nishio, Koji; Saito,  
Toshihiko (Sanyo Denki Kk, Japan). Jpn. Kokai Tokkyo Koho JP  
08321312 A 19961203 Heisei, 5 pp. (Japanese). CODEN:  
JKXXAF. APPLICATION: JP 1995-150844 19950524.  
AB Li **batteries** use **electrolytes** contg. LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> dissolved in  
high dielec. const. solvent selected from ethylene **carbonate**,  
propylene **carbonate**, and butylene **carbonate**; where the **electrolytes**  
contain 1-20 vol.% additive selected from triethylamine, n-  
butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2- methoxy  
ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile,  
benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-

dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me sulfide, 2-Me thiophene, 1-butane thiol, benzenethiol, di-Me sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite, butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone, DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinate. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the solvents and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the **batteries** have improved storage property. These **batteries** have long shelf life.

IT 21324-40-3, Lithium hexafluorophosphate  
(nonaq. **electrolyte** solns. contg. self discharge  
inhibitors for lithium **batteries**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

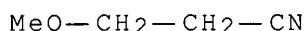


● Li<sup>+</sup>

IT 110-67-8, 3-Methoxypropionitrile  
(self discharge inhibitors in nonaq. **electrolyte** solns.  
for lithium **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01M006-16  
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lithium **battery electrolyte** self discharge

inhibitor

IT **Battery electrolytes**  
 (self discharge inhibitors in nonaq. **electrolyte** solns.  
 for lithium **batteries**)

IT 7439-93-2, Lithium, uses **21324-40-3**, Lithium  
 hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate  
 (nonaq. **electrolyte** solns. contg. self discharge  
 inhibitors for lithium **batteries**)

IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5,  
 Dimethylsulfoxide, uses 67-71-0, Dimethylsulfone 68-12-2,  
 N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7,  
 Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane,  
 uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9,  
 N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses  
 107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses  
 109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses  
 109-79-5, 1-Butanethiol **110-67-8**, 3-Methoxypropionitrile  
 110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0,  
 Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4,  
 Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole  
 290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8,  
 3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2,  
 Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5,  
 Ethylmethylsulfide 666-15-9 872-50-4, N-Methyl-2-pyrrolidone,  
 uses 1193-10-8, 3-Methylsulfolene 1912-28-3, Methyl ethyl  
 sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine  
 15980-15-1, 1,4-Thioxane 19836-78-3 28452-93-9, Butadienesulfone  
 (self discharge inhibitors in nonaq. **electrolyte** solns.  
 for lithium **batteries**)

IT 96-49-1, Ethylene **carbonate** 108-32-7, Propylene  
**carbonate** 110-71-4, 1,2-Dimethoxyethane 4437-85-8,  
 Butylene **carbonate**  
 (solvents for nonaq. **electrolyte** solns. contg. self  
 discharge inhibitors for lithium **batteries**)

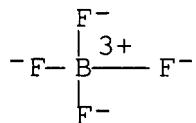
L49 ANSWER 5 OF 7 HCA COPYRIGHT 2007 ACS on STN

122:145421 Model for oxide film growth in aluminum anodization. Izotov,  
 V. Yu.; Maletin, Yu. A.; Koval, L. B.; Mironova, A. A.; Kozachkov,  
 S. G.; Nezdonorovin, V. P. (V. I. Vernadsky Inst., National Acad. Sci.  
 Ukraine, Kiev, 252680, Ukraine). Teoreticheskaya i  
 Eksperimental'naya Khimiya, 30(5), 272-6 (Russian) **1994**.  
 CODEN: TEKHA4. ISSN: 0497-2627. Publisher: Institut Fizicheskoi  
 Khimii im. L. V. Pisarzhevskogo AN Ukrainsk.

AB A theor. model was developed to describe the formation of amorphous  
 or polycryst. oxide films on the surface of Al during its  
 anodization. Satisfactory agreement between the model and exptl.

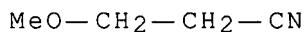
data on anodization in **electrolytes** based on various dicarboxylic acids is illustrated.

IT **14283-07-9**, Lithium tetrafluoroborate  
(aluminum anodization in baths contg. various solvents and salts)  
RN 14283-07-9 HCA  
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



●  $\text{Li}^+$

IT **110-67-8**, 3-Methoxypropionitrile  
(aluminum anodization in baths contg. various solvents and salts)  
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-7 (Electrochemistry)  
Section cross-reference(s): 56  
IT 429-06-1, Tetraethylammonium tetrafluoroborate 1113-38-8, Ammonium oxalate 2226-88-2, Ammonium succinate **14283-07-9**,  
Lithium tetrafluoroborate 15967-97-2 18815-40-2, Ammonium malonate 19090-60-9, Ammonium adipate 29750-34-3, Ammonium glutarate 41606-95-5, Tetraethylammonium phthalate, uses 161204-77-9, uses  
(aluminum anodization in baths contg. various solvents and salts)  
IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0,  $\gamma$ -Butyrolactone 107-21-1, Ethylene glycol, uses 108-32-7, Propylene carbonate **110-67-8**, 3-Methoxypropionitrile 111754-40-6, Tetraethylammonium maleate, uses  
(aluminum anodization in baths contg. various solvents and salts)

L49 ANSWER 6 OF 7 HCA COPYRIGHT 2007 ACS on STN  
122:18779 Electrochemical properties of organic liquid  
**electrolytes** based on quaternary onium salts for electrical

double-layer capacitors. Ue, Makoto; Ida, Kazuhiko; Mori, Shoichiro (Mitsubishi Petrochem. Co., Tsukuba Res. Center, Ibaraki, 300-03, Japan). Journal of the Electrochemical Society, 141(11), 2989-96 (English) 1994. CODEN: JESOAN. ISSN: 0013-4651.

Publisher: Electrochemical Society.

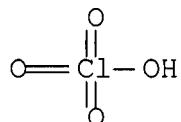
AB The **electrolytic** conductivities and limiting redn. and oxidn. potentials for various org. liq. **electrolytes** based on quaternary onium salts find better **electrolytes** for elec. double-layer capacitors. An **electrolyte** composed of tetraethylammonium cation, tetrafluoroborate anion, and propylene **carbonate** solvent showed well-balanced performance of high **electrolytic** cond., a wide stable potential window and resistance to hydrolysis. Among quaternary onium salts, triethylmethylammonium, ethylmethylpyrrolidinium, and tetramethylenepyrrolidinium tetrafluoroborate salts exhibited higher **electrolytic** cond. than the conventional tetraethylammonium salt due to their much greater solv.

IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate(1-) 21324-40-3, Lithium hexafluorophosphate(1-)

(elec. cond. in various solvents for. org. **electrolyte** for double-layer capacitors)

RN 7791-03-9 HCA

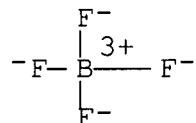
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

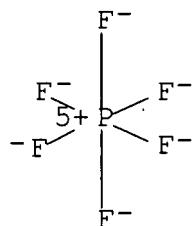
RN 14283-07-9 HCA

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCA  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

IT 110-67-8, 3-Methoxypropionitrile  
(phys. properties and elec. cond. and limiting redn. and oxidn.  
potentials in tetraethylammonium tetrafluoroborate-contg.)

RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

CC 72-2 (Electrochemistry)  
Section cross-reference(s): 68, 76  
ST electrochem property quaternary onium salt capacitor; org  
**electrolyte** electrochem property capacitor;  
tetraethylammonium tetrafluoroborate propylene **carbonate**  
property capacitor; triethylmethylammonium ethylmethylpyrrolidinium  
tetramethylenepyrrolidinium tetrafluoroborate capacitor; potential  
org **electrolyte** double layer capacitor; cond org  
**electrolyte** double layer capacitor; double layer capacitor  
potential cond **electrolyte**  
IT Electric conductivity and conduction  
(of org. liq. **electrolytes** based on quaternary onium  
salts for double-layer capacitors)  
IT Phosphonium compounds  
Quaternary ammonium compounds, uses  
(org. liq. **electrolytes** based on quaternary onium salts  
for double-layer capacitors)  
IT Electric capacitors  
(double-layer, org. liq. **electrolytes** based on

quaternary onium salts for)

IT Electric potential  
 (oxidn., limiting; of org. liq. **electrolytes** based on  
 quaternary onium salts for double-layer capacitors)

IT Electric potential  
 (redn., limiting; of org. liq. **electrolytes** based on  
 quaternary onium salts for double-layer capacitors)

IT 661-36-9, Tetramethylammonium tetrafluoroborate(1-) 665-49-6,  
 Tetraethylphosphonium tetrafluoroborate 1813-60-1,  
 Tetrabutylphosphonium tetrafluoroborate 15553-50-1,  
 Tetrahexylammonium tetrafluoroborate 24688-98-0,  
 Tetrapropylphosphonium tetrafluoroborate 41093-49-6 69444-47-9,  
 Triethylmethylammonium tetrafluoroborate 69444-48-0,  
 Tributylmethylammonium tetrafluoroborate 69444-49-1 69444-50-4  
 69444-51-5 117029-35-3 117947-85-0 117947-86-1 117947-87-2  
 118812-70-7, Diethyldimethylammonium tetrafluoroborate 129211-47-8  
 158151-18-9, Ethyltrimethylammonium tetrafluoroborate 159599-73-2  
 (elec. cond. and limiting redn. and oxidn. potentials in  
 propylene **carbonate** contg. quaternary ammonium or  
 phosphonium tetrafluoroborate for **electrolyte** for  
 double-layer capacitors)

IT 429-06-1, Tetraethylammonium tetrafluoroborate(1-)  
 (elec. cond. and limiting redn. and oxidn. potentials in various  
 solvents for **electrolyte** for elec. double-layer  
 capacitors)

IT 429-07-2, Tetraethylammonium hexafluorophosphate(1-) 2567-83-1,  
 Tetraethylammonium perchlorate 35895-69-3, Tetraethylammonium  
 trifluoromethanesulfonate  
 (elec. cond. in various solvents and limiting redn. and oxidn.  
 potentials of propylene **carbonate** contg.)

IT 3109-63-5, Tetrabutylammonium hexafluorophosphate(1-)  
 (elec. cond. in various solvents for. org. **electrolyte**  
 for double-layer capacitor)

IT 338-38-5, Tetrapropylammonium tetrafluoroborate(1-) 429-42-5,  
 Tetrabutylammonium tetrafluoroborate(1-) 558-32-7,  
 Tetramethylammonium hexafluorophosphate(1-) 1923-70-2,  
 Tetrabutylammonium perchlorate **7791-03-9**, Lithium  
 perchlorate 12110-21-3, Tetrapropylammonium hexafluorophosphate(1-)  
**14283-07-9**, Lithium tetrafluoroborate(1-)  
**21324-40-3**, Lithium hexafluorophosphate(1-) 25628-09-5,  
 Tetramethylammonium trifluoromethanesulfonate 33454-82-9, Lithium  
 trifluoromethanesulfonate 35895-70-6, Tetrabutylammonium  
 trifluoromethanesulfonate 35925-48-5, Tetrapropylammonium  
 trifluoromethanesulfonate  
 (elec. cond. in various solvents for. org. **electrolyte**  
 for double-layer capacitors)

IT 79-24-3, Nitroethane 107-12-0, Propionitrile **110-67-8**,

3-Methoxypropionitrile 111-69-3, Adiponitrile 512-56-1,  
Trimethyl phosphate 544-13-8, Glutaronitrile 1738-36-9,  
Methoxyacetonitrile 4437-85-8, Butylene **carbonate**  
(phys. properties and elec. cond. and limiting redn. and oxidn.  
potentials in tetraethylammonium tetrafluoroborate-contg.)

L49 ANSWER 7 OF 7 HCA COPYRIGHT 2007 ACS on STN

110:176598 Research of new solvents for lithium **batteries**. II.

Behavior of aliphatic nitriles substituted by electron donating groups. Guibert, Sylvie; Cariou, Michel; Simonet, Jacques (Lab. Electrochim., Univ. Rennes I, Rennes, 35042, Fr.). Bulletin de la Societe Chimique de France (6), 924-9 (French) **1988**.

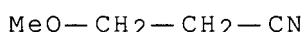
CODEN: BSCFAS. ISSN: 0037-8968.

AB Methoxyacetonitrile (I), methoxy-3-propionitrile, and cyano-1-pyrrolidine have low reactivity towards Li and a broad electrochem. stability window (>5.0 V), suitable for use as **electrolyte** solvents in Li **batteries**. The dimer of I is formed in basic conditions or in the presence of an alkali metal and can be oxidized electrochem. At potentials more cathodic than the equil. potential of the Li/Li<sup>+</sup> couple, I is electrochem. unstable, but the formation of the dimer can be reversed by controlling the pH of the medium.

IT **110-67-8**, Methoxy-3-propionitrile  
(chem. and electrochem. stability of, for lithium **battery electrolyte** use)

RN 110-67-8 HCA

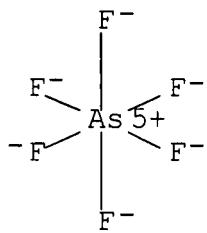
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IT **29935-35-1**, Lithium hexafluoroarsenate (LiAsF<sub>6</sub>)  
(**electrolytes** contg., aliph. nitrile solvents for,  
stability of)

RN 29935-35-1 HCA

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 28, 72

ST methoxyacetonitrile stability **electrolyte** lithium  
**battery**; cyanopyrrolidine stability **electrolyte**  
 lithium **battery**; methoxypropionitrile stability  
**electrolyte** lithium **battery**

IT **Batteries**, secondary  
 (lithium, **electrolytes** for, aliph. nitrile solvents  
 for, stability of)

IT 110-67-8, Methoxy-3-propionitrile 1530-88-7,  
 Cyano-1-pyrrolidine 1738-36-9, Methoxyacetonitrile  
 (chem. and electrochem. stability of, for lithium **battery**  
**electrolyte** use)

IT 29935-35-1, Lithium hexafluoroarsenate (LiAsF<sub>6</sub>)  
 (**electrolytes** contg., aliph. nitrile solvents for,  
 stability of)

IT 65857-42-3P  
 (formation and electrochem. oxidn. of, from methoxyacetonitrile,  
**electrolyte** solvent use in relation to)

IT 7439-93-2, Lithium, reactions  
 (reaction of, with aliph. nitrile solvents, **battery**  
**electrolyte** use in relation to)

=> D L50 1-11 CBIB ABS HITSTR HITIND

L50 ANSWER 1 OF 11 HCA COPYRIGHT 2007 ACS on STN  
 139:373188 **Electrolytic** solutions with high specific  
 electroconductivity for double-layer electric capacitors.  
 Kobayashi, Yukiya; Seike, Hideo; Takamuku, Yoshinori (Sanyo Chemical  
 Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.).  
 Jpn. Kokai Tokkyo Koho JP 2003324039 A **20031114**, 8 pp.  
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-48795 20030226.

PRIORITY: JP 2002-50174 20020226.

AB The **electrolytic** solns. comprise (A) **electrolytes** contg. amidinium cations R<sub>2</sub>3N+C(R<sub>1</sub>):NR<sub>2</sub> or [(R<sub>4</sub>2N)2CR<sub>3</sub>]<sup>+</sup> [R<sub>1</sub>, R<sub>3</sub> = (substituted) C<sub>1</sub>-20 hydrocarbyl, H; R<sub>2</sub>, R<sub>4</sub> = (substituted) C<sub>1</sub>-10 hydrocarbyl; R<sub>1</sub> and R<sub>2</sub> or R<sub>3</sub> and R<sub>4</sub> may link together to form a heterocyclic ring with N] and anions and (B) nonaq. solvents with viscosity at 25° 0.1-1.3 mPa-s. The double-layer elec. capacitors have polarizable electrodes impregnated with the **electrolytic** solns., wherein cathodes or anodes contain carbonaceous materials as main components. The double-layer elec. capacitors show low equiv. series resistance.

IT **110-67-8**, 3-Methoxypropionitrile  
(**electrolyte** solvent; **electrolytic** solns.  
contg. amidinium cations with high specific electrocond. for  
double-layer elec. capacitors)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038  
ICS H01G009-035; H01G009-058; H01G009-14  
CC 76-10 (Electric Phenomena)  
ST **electrolyte** double layer elec capacitor amidinium cation  
IT Capacitors  
(double layer; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)  
IT Carbonaceous materials (technological products)  
(electrodes; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)  
IT **Electrolytes**  
**Electrolytic** capacitors  
(**electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)  
IT 7440-44-0, Activated carbon, uses  
(activated, electrode; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)  
IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-52-5, Nitromethane, uses 79-24-3, Nitroethane 96-49-1, Ethylene **carbonate** 107-12-0, Propionitrile 108-32-7, Propylene **carbonate** 109-74-0, Butyronitrile  
**110-67-8**, 3-Methoxypropionitrile 126-33-0, Sulfolan

127-19-5, N,N-Dimethylacetamide 1738-36-9, Methoxyacetonitrile  
(**electrolyte** solvent; **electrolytic** solns.

contg. amidinium cations with high specific electrocond. for  
double-layer elec. capacitors)

IT 137581-28-3, 1,2,3-Trimethyl-1,4,5,6-tetrahydropyrimidinium  
hexafluorophosphate 143314-16-3, 1-Ethyl-3-methylimidazolium  
tetrafluoroborate 620944-22-1, 1,2,3-Trimethylimidazolium  
hexafluorophosphate  
(**electrolyte**; **electrolytic** solns. contg.  
amidinium cations with high specific electrocond. for  
double-layer elec. capacitors)

L50 ANSWER 2 OF 11 HCA COPYRIGHT 2007 ACS on STN

139:269341 **Electrolyte** solution for use in capacitors,  
**electrochemical cells**, and lithium ion

**batteries**. Schwake, Andree (Epcos AG, Germany). PCT Int.

Appl. WO 2003081620 A1 **20031002**, 19 pp. DESIGNATED

STATES: W: CN, JP, RU, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,  
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2.

APPLICATION: WO 2003-DE815 20030313. PRIORITY: DE 2002-10212609  
20020321.

AB The invention relates to an **electrolyte** soln. for **electrochem. cells**  
with a high b.p.  $> 86^\circ$  at 1 bar and a high degree of cond.  $> 40$  mS/cm  
at  $25^\circ$ . The soln. contains MeCN as the 1st solvent, (component A),  
in a proportion of 40-90% of the av. wt. of the solvent, in addn. to  
 $\geq 1$  addnl. electrochem. stable solvent with a b.p.  $> 120^\circ$  at 1 bar, a  
dielec. const.  $> 10$  at  $25^\circ$  and a viscosity  $< 6$  mPa at  $25^\circ$  and addnl.  
 $\geq 1$  support **electrolyte** as component C. Inventive **electrolyte** solns.  
of this type have a high degree of cond., which is comparable to  
**electrolyte** solns. that use MeCN as the sole solvent, while at the  
same time exhibiting an increased b.p. as a result of component B.

IT **110-67-8**

(**electrolytic** soln. contg.; **electrolyte** soln.  
for use in capacitors, **electrochem. cells**,  
and lithium ion **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038  
ICS H01M010-40

CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 52, 72

ST   **electrolytic** soln capacitor **electrochem**  
      **cell** lithium ion **battery**

IT   Capacitors  
      (double layer; **electrolyte** soln. for use in capacitors,  
      **electrochem. cells**, and lithium ion  
      **batteries**)

IT   **Electrochemical cells**  
      **Electrolytic** capacitors  
      **Electrolytic** solutions  
      (**electrolyte** soln. for use in capacitors,  
      **electrochem. cells**, and lithium ion  
      **batteries**)

IT   Primary **batteries**  
      Secondary **batteries**  
      (lithium; **electrolyte** soln. for use in capacitors,  
      **electrochem. cells**, and lithium ion  
      **batteries**)

IT   67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylformamide, uses  
      80-73-9, N,N-Dimethylimidazolidinone 96-48-0,  $\gamma$ -  
      Butyrolactone 96-49-1, Ethylene **carbonate** 105-58-8,  
      Diethyl **carbonate** 108-29-2,  $\gamma$ -Valerolactone  
      108-32-7, Propylene **carbonate** 110-61-2, Succinonitrile  
      **110-67-8** 126-33-0, Sulfolane 127-19-5, Dimethylacetamide  
      512-56-1, Trimethyl phosphate 544-13-8, Glutaronitrile 623-53-0,  
      Ethylmethyl **carbonate** 661-36-9, Tetramethylammonium  
      tetrafluoroborate 872-50-4, uses 872-93-5, 3-Methylsulfolane  
      4437-85-8, Butylene **carbonate** 19836-78-3,  
      3-Methyl-2-oxazolidinone  
      (**electrolytic** soln. contg.; **electrolyte** soln.  
      for use in capacitors, **electrochem. cells**,  
      and lithium ion **batteries**)

L50 ANSWER 3 OF 11 HCA COPYRIGHT 2007 ACS on STN

138:139978 Effect of the cell structure elements on performance of  
      dye-sensitized solar cell. Han, Liyuan; Yamanaka, Ryohsuke; Obata,  
      Takatsugu (Technical Main Dept., Sharp Co., Ltd., Japan). Shapu  
      Giho, 83, 49-53 (Japanese) 2002. CODEN: STEJD9. ISSN:  
      0285-0362. Publisher: Shapu K.K. Gijutsu Honbu.

AB   A TiO<sub>2</sub> porous light electrode, absorption of a dye and compn. of  
      **electrolyte** were investigated for the improvement in energy  
      conversion efficiency of the dye-sensitized solar cell. It is found  
      that increase in the porosity of TiO<sub>2</sub> porous light electrode causes  
      increase in the efficiency because more dye is absorbed on the  
      electrode. Dye uptake increases with absorption temp., when the  
      temp. is over 90°, however, short circuit current (J<sub>sc</sub>) decreases  
      because of dye aggregation. It is also found that high J<sub>sc</sub> can be  
      obtained by increasing the ionic cond. of **electrolyte**. Finally, the

efficiency of 8% was obtained. It is necessary to develop a new dye with broad absorbance in order to obtain the efficiency as high as silicon solar cell.

IT **110-67-8**, 3-Methoxypropionitrile  
(effect of cell structure elements on performance of  
dye-sensitized solar cell)  
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76  
IT 75-05-8, Acetonitrile, uses 96-49-1, Ethylene **carbonate**  
**110-67-8**, 3-Methoxypropionitrile 631-40-3,  
Tetrapropylammonium iodide 3978-81-2, 4-tert-Butylpyridine  
7553-56-2, Iodine, uses 10377-51-2, Lithium iodide (LiI)  
13463-67-7, Titania, uses 19836-78-3, 3-Methyl-2-oxazolidinone  
218151-78-1, 1,2-Dimethyl-3-propylimidazolium iodide  
(effect of cell structure elements on performance of  
dye-sensitized solar cell)  
L50 ANSWER 4 OF 11 HCA COPYRIGHT 2007 ACS on STN  
138:82077 Flame-retardant **electrolyte** solution for  
electrochemical double-layer capacitors. Schwake, Andree (Epcos AG,  
Germany). PCT Int. Appl. WO 2003003393 A1 **20030109**, 29  
pp. DESIGNATED STATES: W: AU, BR, CA, CN, CZ, HU, IN, JP, KR, MX,  
RU, UA, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT,  
LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO  
2002-DE1844 20020522. PRIORITY: DE 2001-10128581 20010613.  
AB The invention relates to flame-retardant **electrolyte** solns. with  
flash points >76°. The solns. contain ≥1 support **electrolyte** which  
is dissolved in a solvent mixt.. consisting of ≥1 highly polar  
component and ≥1 flame-retardant, low-viscosity carbamate component.  
The flame-retardant **electrolyte** solns. are indicated for use in  
electrochem. capacitors with conductivities of > 20 mS/cm at 25°.  
IT **110-67-8**, 3-Methoxypropionitrile  
(capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
capacitors)  
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-00  
ICS H01G009-02; H01M010-40  
CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 72  
ST electrochem double layer capacitor flame retardant  
**electrolyte**  
IT Lactones  
Nitriles, uses  
Phosphonium compounds  
Pyridinium compounds  
Quaternary ammonium compounds, uses  
(capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
capacitors)  
IT Felts  
Paper  
Textiles  
(capacitor separator; flame-retardant **electrolyte** soln.  
for electrochem. double-layer capacitors)  
IT Glass fibers, uses  
Polymers, uses  
(capacitor separator; flame-retardant **electrolyte** soln.  
for electrochem. double-layer capacitors)  
IT Capacitors  
(double layer; flame-retardant **electrolyte** soln. for  
electrochem. double-layer capacitors)  
IT Capacitor electrodes  
**Electrolytic** capacitors  
**Electrolytic** solutions  
Fire-resistant materials  
(flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)  
IT Onium compounds  
(imidazolium compds., capacitor **electrolyte** contg.;  
flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)  
IT Onium compounds  
(morpholinium compds., capacitor **electrolyte** contg.;  
flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)  
IT Onium compounds  
(pyrrolidinium compds., capacitor **electrolyte** contg.;

flame-retardant **electrolyte** soln. for electrochem.  
double-layer capacitors)

IT 75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene **carbonate** 108-29-2,  
 $\gamma$ -Valerolactone 108-32-7, Propylene **carbonate**  
110-61-2, Succinonitrile **110-67-8**, 3-Methoxypropionitrile  
407-43-2, Carbamic acid, dimethyl-, 2,2,2-trifluoroethyl ester  
429-06-1, Tetraethylammonium tetrafluoroborate 544-13-8,  
Glutaronitrile 687-48-9, Ethyl-N,N-dimethylcarbamate 7541-16-4,  
Methyl-N,N-dimethylcarbamate 69444-47-9, Methyltriethylammonium  
tetrafluoroborate  
(capacitor **electrolyte** contg.; flame-retardant  
**electrolyte** soln. for electrochem. double-layer  
capacitors)

IT 7429-90-5, Aluminum, uses  
(capacitor separator; flame-retardant **electrolyte** soln.  
for electrochem. double-layer capacitors)

L50 ANSWER 5 OF 11 HCA COPYRIGHT 2007 ACS on STN

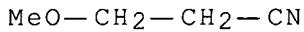
138:46203 Rest potential of activated carbon electrode in various  
organic **electrolytes**. Takeda, Masayuki (Sci. Tech. Res.  
Cent., Mitsubishi Chem. Corp., Japan). Denkai Chikudenki Hyoron,  
53(1), 135-137 (Japanese) **2002**. CODEN: DCHYAK. ISSN:  
0286-5629. Publisher: Denkai Chikudenki Kenkyukai.

AB The rest potential of the activated C electrode, which were measured  
in 14 kinds of org. solvents, such as **carbonate**, nitriles, lactones,  
DMF, DMSO, etc., ranged from -0.29 V to -0.16 V vs. EFc/Fc, that  
could not be correlate with the structure of solvent mol. The  
relation between the rest potential and the donor no. or the acceptor  
nos. of these solvents are discussed.

IT **110-67-8**, 3-Methoxypropionitrile  
(rest potential of activated carbon electrode in)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-2 (Electrochemistry)

ST rest potential carbon electrode org **electrolyte**; solvent  
effect rest potential carbon electrode

IT Electron acceptors

Electron donors

(aprotic solvents; rest potential of activated carbon electrode  
in various org. **electrolytes**)

IT Electrodes  
(rest potential of activated carbon electrode in various org.  
**electrolytes**)

IT Electric potential  
(rest; of activated carbon electrode in various org.  
**electrolytes**)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, DMF, uses 75-05-8,  
Acetonitrile, uses 80-73-9, N,N-Dimethylimidazolidinone 96-48-0,  
 $\gamma$ -Butyrolactone 108-29-2,  $\gamma$ -Valerolactone 108-32-7,  
Propylene **carbonate** 110-67-8,  
3-Methoxypropionitrile 126-33-0, Sulfolane 127-19-5,  
N,N-Dimethylacetamide 512-56-1, Trimethyl phosphate 872-50-4,  
uses 1738-36-9, Methoxyacetonitrile 59581-66-7  
(rest potential of activated carbon electrode in)

IT 7440-44-0, Carbon, uses  
(rest potential of activated carbon electrode in various org.  
**electrolytes**)

L50 ANSWER 6 OF 11 HCA COPYRIGHT 2007 ACS on STN

136:378574 Method of manufacturing a electric double layer  
supercapacitor with electrode of carbon particle layer. Maletin,  
Yurii A.; Strizhakova, Natalie G.; Izotov, Vladimiz Y.; Mironova,  
Antonia A.; Kozachkov, Sergey G.; Danilin, Valery A.; Podmogilny,  
Sergey N.; Arulepp, Mati; Aleksandrovna, Kukusjkina Julia;  
Efimovitj, Kravtjik Aleksandr; Vasilevitj, Sokolov Vasilij; Perkson,  
Anti; Leis, Jaan; Zheng, Jie; Konstantinovich, Gordeev Sergey;  
Kolotilova, Julia Y.; Cederstroem, Jan; Wallace, Clarence L.  
(Ultratec Ltd., UK). PCT Int. Appl. WO 2002039468 A2  
**20020516**, 48 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT,  
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,  
DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,  
MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK,  
ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN,  
TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO  
2001-EP12837 20011106. PRIORITY: US 2000-247593P 20001109; RU  
2001-117550 20010615.

AB The present invention relates to an elec. double layer capacitor  
including  $\geq 1$  pair of polarizable electrodes connected to current  
collectors, a separator made of ion-permeable but electron-insulating  
material interposed between the electrodes in each pair of  
electrodes, and a liq. **electrolyte**. According to the invention the  
electrodes include a layer of C particles having a narrow  
distribution of nanopores therein, the pore sizes of the nanopores  
being adapted to fit the ion sizes of the **electrolyte**.

IT 110-67-8, 3-Methoxypropionitrile  
(aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)  
RN 110-67-8 HCA  
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-00  
CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 35  
IT Binders  
Capacitor electrodes  
**Electrolytes**  
Filaments  
Halogenation  
Thermal decomposition  
(elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)  
IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses  
78-93-3, Methyl ethyl ketone, uses 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene **carbonate** 100-47-0, Benzonitrile, uses  
107-12-0, Propionitrile 108-29-2,  $\gamma$ -Valerolactone  
108-32-7, Propylene **carbonate** 109-74-0, Butyronitrile  
109-99-9, Tetrahydrofuran, uses 110-67-8,  
3-Methoxypropionitrile 110-71-4 872-50-4, N-Methyl pyrrolidone,  
uses  
(aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)  
IT 14874-70-5D, Tetrafluoroborate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanedium salts 14874-70-5D,  
Tetrafluoroborate, tetraalkylammonium salts 14874-70-5D,  
Tetrafluoroborate, tetrakis(dialkylamino) phosphonium salts  
16919-18-9D, Hexafluorophosphate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanedium salts 16919-18-9D,  
Hexafluorophosphate, tetraalkylammonium salts 16919-18-9D,  
Hexafluorophosphate, tetrakis(dialkylamino) phosphonium salts  
(liq. **electrolyte** made of; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)  
IT 110320-40-6, Polypropylene **carbonate**  
(secondary binder; elec. double layer supercapacitor with

electrode of carbon particle layer and a method of manufg. such a supercapacitor)

L50 ANSWER 7 OF 11 HCA COPYRIGHT 2007 ACS on STN

136:88337 Dye-sensitized photoelectric transducer. Yanagida, Shozo; Ikeda, Masaaki; Shigaki, Koichiro; Inoue, Teruhisa (Nippon Kayaku Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002001667 A1 20020103, 25 pp. DESIGNATED STATES: W: CA, CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP5452 20010626. PRIORITY: JP 2000-195464 20000629.

AB The invention aims at developing an expensive photoelec. transducer exhibiting a high conversion efficiency. The solar **battery**, using the photoelec. transducer, comprises a thin film made of semiconductor fine particles sensitized by having a specific azo dye supported thereon. The photoelec. transducer contains arom. group to which at least one group, selected from carboxyl, hydroxyl, phosphoric acid, phosphoric ester, or mercapto, is bonded either directly or indirectly. Another arom. group is substituted by, at least one, electron-donating group.

IT **110-67-8**

(dye-sensitized photoelec. transducer for solar **battery**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01M014-00  
ICS H01L031-04

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 76, 77

IT Dyes  
Photoelectric devices  
Semiconductor materials  
Solar cells

(dye-sensitized photoelec. transducer for solar **battery**)

IT Transducers  
(photoelec.; dye-sensitized photoelec. transducer for solar **battery**)

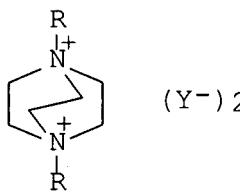
IT 101-51-9 3566-94-7 6434-57-7 7440-06-4, Platinum, uses  
13463-67-7, Titania, uses 14847-54-2 57741-47-6 61212-66-6  
85720-86-1 93935-92-3 141460-19-7 386206-87-7 386206-88-8

386206-89-9	386206-90-2	386206-91-3	386206-92-4	386206-93-5
386206-94-6	386206-95-7	386206-97-9	386207-00-7	386207-03-0
386207-05-2	386207-06-3	386207-07-4	386207-08-5	386207-09-6
386207-10-9	386207-11-0	386207-12-1	386207-13-2	386207-14-3
386207-15-4	386207-16-5	386207-17-6	386207-18-7	386207-19-8
386207-20-1	386207-21-2	386207-22-3	386207-23-4	386213-80-5
(dye-sensitized photoelec. transducer for solar <b>battery</b> )				
IT 96-49-1, Ethylene <b>carbonate</b> 7550-45-0, Titanium tetrachloride, uses 10377-51-2, Lithium iodide (dye-sensitized photoelec. transducer for solar <b>battery</b> )				
IT 75-05-8, Acetonitrile, reactions <b>110-67-8</b> 631-40-3, Tetra(propylammonium) iodide 7553-56-2, Iodine, reactions 118676-08-7 218151-78-1 (dye-sensitized photoelec. transducer for solar <b>battery</b> )				

L50 ANSWER 8 OF 11 HCA COPYRIGHT 2007 ACS on STN

132:8268 Novel **electrolytes** for electrochemical double layer capacitors. Maletin, Yurii; Strizhakova, Natalie; Izotov, Vladimir; Mironova, Antonia; Danilin, Valery; Kozachov, Sergey (Superfarad Ltd., UK). PCT Int. Appl. WO 9960587 A1 **19991125**, 22 pp.  
 DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP3412 19990518. PRIORITY: UA 1998-52573 19980518.

GI

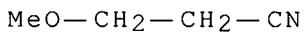


AB Novel org. **electrolytes** comprising tetrafluoroborates and hexafluorophosphates of doubly charged cations of N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanediium (DADACO) are disclosed, which have the general formula I, where R = C1-C4 alkyl and Y- = BF4- or PF6-. The compds. are dissolved in an aprotic polar solvent or a mixt. of such solvents to form **electrolytes** for electrochem. double layer capacitors.

IT **110-67-8**, 3-Methoxypropionitrile  
(solvent; **electrolytes** for electrochem. double layer capacitors contg.)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038

CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 72

ST **electrolyte** electrochem double layer capacitor;  
alkyldiazabicyclooctanediium tetrafluoroborate hexafluorophosphate  
**electrolyte** electrochem double layer capacitor; fluoroborate  
dialkyldiazabicyclooctanediium **electrolyte** electrochem  
double layer capacitor; fluorophosphate  
dialkyldiazabicyclooctanediium **electrolyte** electrochem  
double layer capacitor; polar solvent **electrolyte**  
electrochem double layer capacitor

IT Capacitors  
(double layer; **electrolytes** for electrochem. double  
layer capacitors)

IT **Electrolytes**  
(**electrolytes** for electrochem. double layer capacitors)

IT Polar solvents  
(**electrolytes** for electrochem. double layer capacitors  
contg.)

IT 429-06-1, Tetraethylammonium tetrafluoroborate 69282-14-0  
120099-85-6 120099-88-9  
(**electrolytes** for electrochem. double layer capacitors  
contg.)

IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses  
78-93-3, 2-Butanone, uses 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene **carbonate** 107-12-0, Propionitrile  
108-29-2,  $\gamma$ -Valerolactone 108-32-7, Propylene  
**carbonate** 109-99-9, Tetrahydrofuran, uses **110-67-8**

, 3-Methoxypropionitrile 110-71-4 872-50-4, 1-Methyl-2-pyrrolidinone, uses  
(solvent; **electrolytes** for electrochem. double layer capacitors contg.)

L50 ANSWER 9 OF 11 HCA COPYRIGHT 2007 ACS on STN

125:345282 Nonaqueous **electrolytic** solution with high electric conductivity for electrochemical capacitor. Ue, Makoto; Takeda, Masayuki; Takehara, Masahiro (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 08250378 A **19960927** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-48743 19950308.

AB The soln. contains a quaternary ammonium salt R1R2R3N+R4.Et3B-Me (R1-4 = C1-4 alkyl) and a bipolar aprotic solvent. The soln. showed improved elec. cond.

IT **110-67-8**, 3-Methoxypropionitrile  
(solvent; nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-038

CC 76-10 (Electric Phenomena)

ST **electrolytic** capacitor soln quaternary ammonium salt; bipolar aprotic solvent **electrolytic** capacitor soln; borate ammonium **electrolytic** capacitor nonaq soln

IT Quaternary ammonium compounds, uses  
(nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT Electric capacitors  
(**electrolytic**, nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT 183858-41-5 183858-43-7  
(nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT 75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene **carbonate** 105-58-8, Diethyl  
**carbonate** 108-29-2,  $\gamma$ -Valerolactone 108-32-7,  
Propylene **carbonate** **110-67-8**,  
3-Methoxypropionitrile 126-33-0, Sulfolane 512-56-1, Trimethyl  
phosphate 542-28-9,  $\delta$ -Valerolactone 616-38-6 623-53-0,  
Ethyl methyl **carbonate** 872-93-5, 3-Methylsulfolane

4437-69-8, Isobutylene **carbonate** 4437-85-8, Butylene **carbonate**

(solvent; nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

L50 ANSWER 10 OF 11 HCA COPYRIGHT 2007 ACS on STN

107:248434 **Electrolyte** solution of quaternary ammonium salts for **electrolytic** capacitors. Mori, Shoichiro; Ue, Makoto (Mitsubishi Petrochemical Co., Ltd., Japan). Eur. Pat. Appl. EP 227433 A2 **19870701**, 13 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1986-309882 19861217. PRIORITY: JP 1985-286980 19851220; JP 1985-286982 19851220; JP 1986-98673 19860428.

AB An **electrolyte** soln. for use in an **electrolytic** capacitor comprises as a solute  $\geq 1$  quaternary  $\text{NH}_4^+$  salt of a carboxylic acid which is selected from 5-40 wt.% of (a) maleic acid and/or citraconic acid or (b) 7-30 wt.% of an arom. carboxylic acid or (c) 1-40 wt.% of a branched-chain aliph. dicarboxylic acid. In (c) the salt has 11-30 C atoms. The **electrolyte** soln. has high elec. cond. when used, e.g., with Al foil electrodes. The solvent is aprotic, preferably an amide or lactone.

IT **110-67-8**

(**electrolytes** contg., for capacitors)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

IC ICM H01G009-02

CC 76-10 (Electric Phenomena)

ST quaternary ammonium salt **electrolyte** capacitor; maleate **electrolyte** capacitor; citraconate **electrolyte** capacitor; arom carboxylate capacitor **electrolyte**; aliph dicarboxylate capacitor **electrolyte**

IT Quaternary ammonium compounds, uses and miscellaneous (**electrolytes** contg., for capacitors)

IT Amides, uses and miscellaneous

Carboxylic acids, uses and miscellaneous

Lactones

(aliph., **electrolytes** contg., for capacitors)

IT Carboxylic acids, uses and miscellaneous

(aryl, **electrolytes** contg., for capacitors)

IT Electric capacitors

(**electrolytic**, quaternary ammonium salts as

**electrolytes** for)

IT 68-12-2, N,N-Dimethylformamide, uses and miscellaneous 96-48-0,  
γ-Butyrolactone 107-21-1, uses and miscellaneous 108-32-7,  
Propylene carbonate **110-67-8** 512-56-1,  
Trimethyl phosphate 3774-74-1, Tetraethylammonium salicylate  
3774-75-2, Tetraethylammonium γ-resorcylate 16909-22-1,  
Tetraethylammonium benzoate 68570-55-8, Tetraethylammonium  
p-nitrobenzoate 68874-26-0 111754-37-1 111754-38-2  
111754-39-3 111754-40-6 111754-42-8 111754-43-9 111754-45-1  
111754-46-2 111754-47-3 111754-48-4 111754-50-8 111754-52-0  
111754-54-2 111778-54-2  
(**electrolytes** contg., for capacitors)

L50 ANSWER 11 OF 11 HCA COPYRIGHT 2007 ACS on STN

102:52900 Heterogeneous redox catalysis with titanium/chromium(III) oxide + titanium dioxide composite anodes. Beck, F.; Schulz, H. (FB 6-Elektrochem., Univ. GH-Duisburg, Duisburg, D-4100/1, Fed. Rep. Ger.). *Electrochimica Acta*, 29(11), 1569-79 (English) **1984**  
. CODEN: ELCAAV. ISSN: 0013-4686.

AB [Ti/Cr<sub>2</sub>O<sub>3</sub> + TiO<sub>2</sub>] composite electrodes were fabricated by a ceramic method, starting with activation solns. contg. CrCl<sub>3</sub>.6H<sub>2</sub>O and Ti(OBu)<sub>4</sub> with subsequent firing in air at 650°. Surface α-Cr<sub>2</sub>O<sub>3</sub> could be anodically stripped in 1M H<sub>2</sub>SO<sub>4</sub> as H<sub>2</sub>CrO<sub>4</sub> at UH ≈ 1.8 V. Conversion of Cr<sub>2</sub>O<sub>3</sub> decreased with increasing thickness of porous Cr<sub>2</sub>O<sub>3</sub> layer. The electrodes were used for the anodic oxidn. of aliph. alcs. and ethers in 1M H<sub>2</sub>SO<sub>4</sub>. Validity of model of heterogeneous redox catalysis is proved by the following results: large amplification of anodic stripping curve in the presence of oxidizable starting materials, coincidence of anodic current voltage curve with basic (stripping) curve at low c.ds., and reaction limitation at high c.ds. Life time (τ) of electrodes, measured galvanostatically, is detd. by dissoln. of CrO<sub>3</sub>, present at the surface of the polarized electrode. Substantial improvement of τ by modification of the solid (Sb<sub>2</sub>O<sub>3</sub> doping) or the **electrolyte** (cosolvents) was demonstrated. Turn over factors of the surface fixed redox system in excess of 1000 were realized.

IT **110-67-8**

(oxidn. of, electrochem., on titanium composite electrode with chromium oxide in sulfuric acid)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH<sub>2</sub>—CH<sub>2</sub>—CN

CC 72-2 (Electrochemistry)

Section cross-reference(s): 67

IT Alcohols, reactions

**Ethers, reactions**

(aliph., oxidn. of, electrocatalytic, on titanium composites with chromium oxide and titanium oxide)

IT 64-17-5, reactions 67-56-1, reactions 67-63-0, reactions

71-23-8, reactions 109-99-9, reactions **110-67-8**

(oxidn. of, electrochem., on titanium composite electrode with chromium oxide in sulfuric acid)

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